

FACT SHEET FOR NPDES GENERAL PERMIT FOR BOATYARDS

SUMMARY

This fact sheet is a companion document to the National Pollutant Discharge Elimination System (NPDES) General Permit for Boat Building and Repair Facilities. It explains the nature of the proposed discharge, Ecology's decisions on limiting the pollutants in the wastewater, and the regulatory and technical basis for those decisions. Public involvement information is contained in Appendix A.

The State of Washington, Department of Ecology (Ecology), has tentatively determined to reissue a general permit to the boatyard industry operating in the State of Washington for the discharge of wastewater resulting from the building and repair of boats less than 65 feet in length. This general permit controls wastewater from pressure washing and stormwater runoff.

This is the third issuance of this general permit. The proposed changes from the previous general permit are: (1) imposition of benchmarks to assure protection of water quality, (2) requiring vacuum sanding as a mandatory best management practice (BMP) and (3) modification of the monitoring requirements. This permit continues to require "no direct discharge to surface waters" for the pressure wash wastewater. The proposed terms, limitations and conditions contained herein are tentative and may be changed as a result of comments and public hearings. Changes to the draft permit as a result of public comment are given in Appendix G.

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the United States Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the State of Washington on the basis of Chapter 90.48 RCW which defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State and EPA include procedures for issuing general permits (Chapter 173-226 WAC), water quality criteria for surface and ground waters (Chapters 173-201A, 40 CFR 131.36 and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit.

The fact sheet and proposed permit have been reviewed by the permit advisory group. Errors and omissions identified in this review have been corrected before going to public notice. Public notice of the availability of the draft permit is required at least thirty days (30) before the permit is issued (WAC 173-226-130). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures). After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. This fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix B--Response to Comments.

The goals of this permit are to be achieved primarily through prohibition of all pressure wash wastewater discharges to surface water and "Best Management Practices" (BMPs) designed to minimize or eliminate the discharge of pollutants. Numeric benchmarks are used to measure success of the BMPs and as an indicator of compliance with water quality standards.

BACKGROUND INFORMATION

DESCRIPTION OF THE INDUSTRY

HISTORY

Under task P-20 of the Puget Sound Water Quality Authority Plan, Ecology was directed to carry out a program for detection and identification of unpermitted discharge sources. One of the significant unpermitted point source discharge groups found by the Elliott Bay and Lake Union Urban Bay Action Teams was the boatyard industry.

Ecology signed a Memorandum of Agreement with the EPA for development and issuance of a general permit for small shipyards. During the development of this permit it was decided to describe facilities in this segment of the Ship and Boat Building and Repairing industry as boatyards. There are presently 107 boatyards under permit in Washington State.

INDUSTRY PROCESS

The applicable Standard Industrial Classifications (SIC) are:

SIC No. 3731 Ship Building and Repairing: "Establishments primarily engaged in building and repairing all types of ships, barges, and lighters, whether propelled by sail or motor power or towed by other craft. This industry also includes the conversion and alteration of ships."

SIC No. 3732 Boat Building and Repairing: "Establishments primarily engaged in building and repairing all types of boats."

A boatyard, as defined for purposes of this permit, is a service business primarily engaged in new construction and repair of small vessels 65 feet or less in length. Services provided may include, but are not limited to: pressure washing; bottom and top side painting; engine, prop, shaft, and rudder repair and replacement; hull repair, joinery, bilge cleaning; fuel and lubrication system repair or replacement; welding and grinding on the hull; buffing and waxing; top-side cleaning; MSD (marine sanitation device) repair or replacement, and other activities necessary to maintain a vessel.

A boatyard may employ one or more of the following to remove or return a vessel to the water: marine railway, drydock, crane, hoist, ramp, or vertical lift. Some yards may build a limited number of custom boats usually constructed of fiberglass or aluminum. Permanent moorage facilities are not usually a feature of a boatyard although a few boatyards do have such facilities.

Those boat repair activities, whether conducted by the vessel's owner or by an agent or contractor hired by the owner, which do not require coverage under this permit include the following:

- Engine repair or maintenance conducted within the engine space without vessel haul-out.
- Topsides cleaning, detailing and bright work.

- Electronics servicing and maintenance.
- MSD servicing and maintenance that does not require haul-out.
- Vessel rigging.
- Minor repairs or modifications to the vessel's superstructure and hull above the waterline which are not extensive (i.e. 25% or less of the vessel's surface area above the waterline).

These activities which do not require coverage under this permit are often conducted in marinas. Marinas conducting boatyard activities may be subject to penalty for discharging without a permit. In addition, marinas must follow the in-water hull cleaning instructions in the Ecology Divers Advisory. Marinas on aquatic lands leased from the Washington Department of Natural Resources must, in accordance with RCW 90.48.386, maintain and follow of plan of operations detailing how all water pollution control requirements of state law will be met or risk losing the lease.

Historically boat repair has been done outdoors on the waterfront. The vessel was supported in a cradle, on barrels, or in a sling while work was done on the hull. Some facilities are endeavoring to change operations in order to do the boat repair under cover. This will contribute to quality control, reduce or eliminate discharges, and improve worker safety.

If all activities are performed indoors, under cover, with no outside activities or exposure except haul-out, coverage under this permit may not be required.

This document will use the generic terms pressure washing and pressure wash wastewater for all pressure washing activities at boatyards.

This permit does not provide coverage for related, ancillary or related industrial or commercial facilities, such as a repair shop for marine engines. Those facilities may qualify for coverage under the Industrial Stormwater General permit, if necessary. This permit does not cover in-water hull cleaning as conducted by contract divers. Ecology has issued guidelines for this type of work to prevent water pollution. Ecology will reissue that guidance concurrently with the issuance of this permit.

WASTEWATER CHARACTERIZATION

Wastes generated by boatyard activities include spent abrasive grits, spent solvent, spent oils, pressure wash wastewater, paint over-spray, paint drips, various cleaners and anti-corrosive compounds, paint chips, scrap metal, welding rods, wood, plastic, resins, glass fibers, and miscellaneous trash such as paper and glass. If not adequately controlled, these pollutants can enter the wastewater stream through the application and preparation of paints and the painted surface; the handling, storage and accidental spills of chemicals, leaks or drips of paints, solvents, thinners; the fracturing and breakdown of abrasive grits; and the repair and maintenance of mechanical equipment. Hull preparation for painting is

commonly done by sanding, grinding or scraping and some abrasive blasting.

The two main wastewater streams are 1) pressure wash wastewater and 2) stormwater runoff. Other potential sources are cooling water, pump testing, gray water, sanitary waste, wash-down of the work area, and engine bilge water. Engine room bilge water and oily wastes are typically collected and disposed of through a licensed contracted disposal company.

PRESSURE WASH WASTEWATER

Pressure wash wastewaters have been sampled by Ecology, local shipyards, boatyards and the Municipality of Metropolitan Seattle (METRO) (1992). The data on the untreated wastewater is presented in Table 1.

Table 1. Characterization of boatyard pressure-washing wastewater

<u>PARAMETER</u>	<u>UNITS</u>	<u>MEAN</u>	<u>HIGHEST VALUE OR RANGE</u>
pH	Std. units	7.2	6.7 -8.2
Turbidity	NTU	469	1700
Suspended Solids	mg/L	800	3100
Oil/grease	mg/L	None visual	
Copper	µg/L	55,000	190,000
Lead	µg/L	1,700	14,000
Zinc	µg/L	6,000	22,000
Tin	µg/L	490	1,400
Arsenic	µg/L	80	100

These metal concentrations (copper, lead, zinc) in the wastewater exceed the typical standards for discharge to sanitary sewer by about a factor of 10 and exceed surface water quality ambient standards by a factor of about 1,000.

STORMWATER

The previous permit required monitoring of stormwater runoff from these facilities for copper, oil/grease and total suspended solids (TSS). In preparation for renewing this permit the monitoring data for copper from 1998 to 2002 was compiled and reviewed for quality assurance. This data represents stormwater with some level of control (BMP's) in place. A data summary for copper is presented below (Table 2 and Table 3).

Table 2. Boatyard stormwater runoff data for copper ($\mu\text{g/L}$) (1998-2002)

		Statistic	Std. Error
Mean		1404.33	200.624
95% Confidence Interval for Mean	Lower Bound	1010.51	
	Upper Bound	1798.15	
5% Trimmed Mean		712.30	
Median		410.00	
Variance		31837687.545	
Std. Deviation		5642.489	
Minimum		2	
Maximum		110000	
Range		109998	
Skewness		13.369	.087
Kurtosis		218.108	.174

This data is not normally distributed as evident from the large difference between the mean and the median and the large kurtosis factor. The data when log normally transformed (Table 3 below) does become normally distributed and the mean derived from that transformation is $334\mu\text{g/L}$ (inverse $\ln 5.8122$).

Table 3. Boatyard stormwater runoff data for copper lognormally transformed(\ln)($\mu\text{g/L}$)

		Statistic	Std. Error
Ln Mean		5.812209	.060766
95% Confidence Interval for Mean	Lower Bound	5.692926	
	Upper Bound	5.931491	
5% Trimmed Mean		5.829624	
Median		6.016157	
Variance		2.921	
Std. Deviation		1.709039	
Minimum		.693147	
Maximum		11.608235	
Range		10.915088	
Skewness		-.169	.087
Kurtosis		.086	.174

For comparison, the State water quality criteria, WAC 173-201A, for acute toxic effects due to copper in marine water is $4.8\mu\text{g/L}$ (dissolved) and the fresh water acute criterion is $4.61\mu\text{g/L}$ (dissolved) at a receiving water hardness of 25mg/L .

The stormwater/copper data was also analyzed for differences between fall sampling (September and October) and spring sampling (May and June). The concentrations for the month of September were also compared to the month of October. It was expected that the fall sampling would show higher concentrations because of the seasonal “first flush” phenomenon and that September would be higher than October. The monitoring data, however, indicated the spring months showed a higher concentration. The average concentration was 32 mg/L ($32,000\mu\text{g/L}$) in the fall and 65 mg/L ($65,000\mu\text{g/L}$) in the spring. October, with an average concentration of 39 mg/L was higher than September with an average concentration of 19 mg/L . These differences

were not statistically significant because of the high variance.

Table 4. A comparison of mean copper concentrations in boatyard stormwater runoff.

<i>September/October 98-02</i>		<i>May/June copper 98-02</i>	
Ln Mean (µg/L)	3.455101205	Ln Mean (µg/L)	4.181421505
Standard Error	1.708693301	Standard Error	2.123183591
Median	0.47	Median	0.442
Mode	1.1	Mode	0.01
Standard Deviation	34.80872895	Standard Deviation	45.78403084
Sample Variance	1211.647611	Sample Variance	2096.17748
Kurtosis	349.1968554	Kurtosis	429.4547862
Skewness	18.25951755	Skewness	20.38487109
Range	680	Range	969.998
Minimum	0	Minimum	0.002
Maximum	680	Maximum	970
Sum	1433.867	Sum	1944.361
Count	415	Count	465

<i>September copper 98-02</i>		<i>October copper 98-02</i>	
Ln Mean (µg/L)	2.954314286	Ln Mean (µg/L)	3.6599319
Standard Error	1.432296061	Standard Error	2.4397959
Median	0.6255	Median	0.399
Mode	0.01	Mode	1.1
Standard Deviation	16.94715554	Standard Deviation	40.752626
Sample Variance	287.2060807	Sample Variance	1660.77652
Kurtosis	134.2196963	Kurtosis	275.816182
Skewness	11.47501237	Skewness	16.5634901
Range	199.995	Range	680
Minimum	0.005	Minimum	0
Maximum	200	Maximum	680
Sum	413.604	Sum	1021.121
Count	140	Count	279

The previous permit also required monitoring for oil/grease and total suspended solids (TSS). There is no water quality standard for oil/grease but Ecology uses 10mg/L average, 15mg/L maximum as technology-based limitations based upon the design performance of gravity oil/water separators. Gravity oil/water separators are not effective with effluent concentrations of 1 mg/L or less at the limit of their hydraulic design capacity.

TSS is a measure of particulate material in wastewater. There is no water quality criterion for TSS but technology-based limitations typically range from 10 to 30 mg/L based on treatment using simple sedimentation.

The combined data (all years, all facilities) for oil/grease and TSS from the last permit is presented below as untransformed (Table 5) and transformed (Table 6) data.

Table 5. Oil/grease (OG) and TSS data from boatyard facilities (untransformed).

			<u>Statistic</u>	<u>Std. Error</u>
OG 98-03	Mean (mg/L)		17.06996	11.507219
	95% Confidence Interval for Mean	Lower Bound	-5.51878	
		Upper Bound	39.65870	
	5% Trimmed Mean		4.18988	
	Median		4.00000	
	Variance		103549.373	
	Std. Deviation		321.790885	
	Minimum		.000	
	Maximum		9000.000	
	Range		9000.000	
	Skewness		27.925	.087
	Kurtosis		780.531	.175
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TSS 98-03	Mean (mg/L)		77.03515	15.323519
	95% Confidence Interval for Mean	Lower Bound	46.95499	
		Upper Bound	107.11531	
	5% Trimmed Mean		34.24496	
	Median		19.00000	
	Variance		183621.606	
	Std. Deviation		428.510917	
	Minimum		.000	
	Maximum		10000.000	
	Range		10000.000	
	Skewness		18.277	.087
	Kurtosis		391.053	.175

The data for oil/grease and TSS is also highly skewed and not normally distributed. The log normal transformations are presented in Table 6 below. This transformed data is normally distributed.

Table 6. Oil/grease (OG) and TSS data from boatyard facilities (lognormal transformed).

			Statistic	Std. Error
OG	Ln Mean (mg/L)		1.15353	.045900548
	95% Confidence Interval for Mean	Lower Bound	1.0634	
		Upper Bound	1.24363	
	5% Trimmed Mean		1.2184945	
	Median		1.386294	
	Variance		1.643	
	Std. Deviation		1.281931	
	Minimum		-5.2983173665	
	Maximum		9.10497985632	
	Range		14.4032972229	
	Skewness		-1.757	.088
	Kurtosis		11.157	.175
TSS	Ln Mean (mg/L)		2.870408	.059352
	95% Confidence Interval for Mean	Lower Bound	2.753899	
		Upper Bound	2.986917	
	5% Trimmed Mean		2.888648	
	Median		2.944438	
	Variance		2.748	
	Std. Deviation		1.657616	
	Minimum		-6.214608	
	Maximum		9.210340	
	Range		15.424948	
	Skewness		-.613	.088
	Kurtosis		3.917	.175

The means for oil/grease and tss from the transformed data are 3.2 mg/L oil/grease and 17.6 mg/L TSS. Additional statistical information on these parameters is presented in Appendix D of this fact sheet.

There is no data on file with a full characterization of pollutants in the stormwater from this industry. Other pollutants which are expected in significant quantities are zinc, lead, and total petroleum hydrocarbons (TPH). Zinc and lead are components of some bottom paints and are also typical pollutants in industrial stormwater. Zinc is used as a sacrificial anode material to prevent corrosion of metal on boats. TPH is a common pollutant from industrial sites. Stormwater from the shipyard industry which has operations similar to the boatyard industry was characterized as follows (Table 7) after the implementation of BMPs:

Table 7. Shipyard pollutants.

	Oil/Grease mg/L	TSS mg/L	Cu µg/L	Pb µg/L	Zn µg/L
median	4	40	220	59	860
95% UCL	10	101	529	273	1820

Ecology will conduct a study in the winter of 2005-2006 to further characterize the pollutants in boatyard stormwater runoff.

PROPOSED PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in an NPDES permit must be either technology- or water quality-based. Technology-based limitations are based upon the treatment methods available to treat specific pollutants. Technology-based limitations are set by regulation or developed on a case-by-case basis (40 CFR 125.3, and Chapter 173-220 WAC). RCW 90.48.010, 90.52.040 and 90.54.020 require the use of all known, available and reasonable methods (AKART) to prevent and control the pollution of waters of the state.

Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (40 CFR 131.36). The more stringent of these two limits (technology or water quality-based) must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Technology-based effluent limitations for discharges consisting of process wastewater typically are based on some type of treatment technology to reduce the pollutants in that wastewater. Stormwater differs from process wastewater in that it is not a continuous discharge, the pollutant sources are not continuous, and the pollutant concentrations are highly variable. EPA, in their stormwater permits, has determined that the use of structural controls and Best Management Practices (BMPs) to prevent the discharge of pollutants via stormwater runoff may be equivalent to BCT and BAT, which are the federally mandated technology-based treatment levels.

Title 40 CFR 122.2 defines BMPs as “schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.” BMPs are techniques for pollution prevention or, in other words, preventing the pollutants from getting into the wastewater (stormwater).

EPA has defined shipyards as a point source category. The draft EPA "Development Document for Shipbuilding and Repair," EPA 440/1-70/076-b, recommends BMPs as the primary method of controlling waste discharges from shipyards to the waters of the state. BMPs achieve pollution control through careful management of the product streams, segregation of potential pollutants in waste streams, and preventing or minimizing contact between water and waste material. Shipyards and boatyards have similar operations.

The Development Document for Shipbuilding and Repair also determined that BMP's constitute BPT (Best Practicable Control Technology) for the shipyard industry. Ecology concludes that BMPs constitute BCT for stormwater discharges in the boatyard industry and that collection and treatment of pressure wash wastewaters constitutes BAT (Best Available Technology

Economically Achievable).

BMPs include structural controls including catch basins and drains, berms, dikes and other containment for oils, chemicals and wastes; roofed storage areas and wastewater treatment facilities. Facilities covered by a general permit requiring BMPs will be required to implement them. The BMPs in the previous boatyard general permit included requirements for:

- Education of Employees and Customers
- Yard Cleaning and Sweeping
- Sediment Traps
- Dust and Overspray Control
- Maintenance of Hoses and Piping
- Bilge Water Control
- Paint and Solvent Use
- Use of Antifouling Paints
- Prohibition on use of Tributyltin
- Cleanup of Debris and Spent Paint
- Chemical Storage
- Waste Disposal
- Dangerous Waste Handling & Reporting
- Recycling of Spilled Chemicals and Rinse Water
- Accidental Oil Discharge
- Oil, Grease, and Fuel Transfers
- In-water hull cleaning
- Zebra Mussels
- Decontamination of the wash pad
- Over water work

This permit contains an additional and mandatory permit requirement for the use of vacuum sanders for removing paint. An analysis of the cost of this technology (Appendix E) indicates costs may be fully recovered by boatyards in a short period of time if they choose to own and rent out the sanders.

TECHNOLOGY-BASED LIMITATIONS FOR PRESSURE WASH WASTEWATER

The primary source of the heavy metals in pressure wash wastewater is from paint removed from the boat hull. As noted previously, the copper concentration in this wastewater exceeded the water quality criteria by several orders of magnitude. The next most common metals, by frequency and in magnitude, in boatyard and shipyard wastewater (or contaminated stormwater) are zinc and lead.

METRO (Municipality of Metropolitan Seattle) received a National Estuary Grant to do a treatment study of Puget Sound shipyard and boatyard wastewater and storm water. The study involved sampling of pressure washing wastewater from a number of these facilities, and testing prototype collection and treatment systems to determine which methods could consistently meet

state and local water quality standards.

METRO produced an analytical report of their findings and developed a guidance manual which was distributed to shipyards, boatyards and publicly owned treatment works (POTW). The manual includes options for treatment and discharge of pressure wash wastewater, bilge and ballast water, and contaminated stormwater to receiving waters, municipal treatment plants, or off-site treatment facilities.

METRO's work clarified and expanded the list of options for treatment and disposal of boatyard wastewaters. The treatment study project was closely aligned with the initial development of the general NPDES permit for boatyards. The study's project manager and project coordinator made valuable contributions to the general permit development by assisting Ecology in establishing standards for best available technology practices for boatyards.

More specifically, the alternatives for treating and disposing of pressure wash wastewater are:

- (1) Recycle and Conservation,
- (2) Collection and discharge (with pretreatment as necessary) of the wastewater to the sanitary sewer which may include chemical addition followed by sedimentation and possibly evaporation.

Option 1 - Recycle/conservation

The preferred means of preventing pollution from pressure washing hulls is recycling of pressure wash wastewater. The typical configuration is multi-stage filtration with some storage capacity. Water lost from evaporation during pressure washing can be made up from rain water falling on the wash pad or from tap water. The solids collected from the filters or from sedimentation in the storage tank are air-dried and handled as solid waste. The recycled water may eventually become contaminated, requiring disposal or treatment. In this case the wastewater may be collected by a licensed waste hauler and treated off-site.

Option 2 - Discharge to POTW

For boatyard facilities which have the ability to connect to a POTW (Publicly Owned Treatment Works), recycling, with occasional discharge of contaminated recycle water to the POTW, is the best treatment method. The recycled water may have to be treated with a polymer and settled before discharge in order to meet the discharge limits of the permit.

For facilities with excess contaminated water, the contaminated water must be hauled to a treatment facility for proper treatment and disposal.

The guidance manual developed by METRO (1992) gives a more detailed discussion of recycling options for pressure wash wastewaters.

Since all boatyards have eliminated direct discharges of pressure wash wastewater to surface water, Ecology has determined that AKART for pressure wash wastewater is recycling, evaporation, or treatment and discharge to the sanitary sewer. Discharges to the sanitary

sewer must meet the discharge requirements included in this permit for non-delegated POTWs or the requirements specified by delegated POTWs. Delegated POTWs are municipal wastewater treatment systems that have received federal pretreatment delegation, through Ecology, to restrict the pollutant loading or concentration of pollutants to their system by a permit system.

Monitoring of pressure wash wastewater in this permit is therefore restricted to discharges which go to a POTW without delegation. The following table gives the monitoring schedule and effluent limits in the permit. The POTW limits and monitoring frequency in the permit were adopted from METRO's pretreatment limits. Pretreatment limits established by delegated POTW's have similar limits and monitoring requirements for discharge into their systems.

Table 8. Limits and monitoring requirements for pressure wash wastewater discharges to non-delegated POTW's

PARAMETER	MINIMUM SAMPLING	SAMPLE TYPE	LIMIT
Flow	June, July, August and September each year	Meter or calculate	N/A
Copper ¹	"	Grab	2.4 mg/L
Zinc ¹	"	Grab	3.3 mg/L
Lead ¹	"	Grab	1.2 mg/L
pH	"	Grab	Within the range of 5 to 11

¹. measured as total recoverable

TECHNOLOGY-BASED LIMITATIONS FOR STORM WATER DISCHARGES

As previously noted, EPA has determined that best management practices (BMP's) are Best Practicable Control Technology for stormwater discharges under the EPA Multisector Stormwater General permit and in their draft effluent guidelines for Shipyards. Ecology believes that best management practices are appropriate control limitations for stormwater discharges from boatyards.

Copper was selected as a monitoring parameter because it is often identified as a pollutant of industrial stormwaters. Also, the METRO study demonstrated copper is the most prevalent metal found in boatyard wastewaters. Therefore, it is a prime indicator metal in determining if an individual boatyard has properly instituted BMPs to control metal discharges.

Oil and grease monitoring was deemed necessary in the previous permit because of the large

volume of petroleum products stored, handled and used at boatyards. For example routine boat maintenance and repair operations include: engine maintenance, fuel, hydraulic, and lube oil transfers. The monitoring data (Appendix D) indicate that discharge of significant amounts of oil/grease is episodic. High concentrations occur infrequently which indicates these occur as accidental spills or poor control measures. A benchmark value of 6.0 mg/L was derived from the existing monitoring data. This benchmark was derived by taking the mean of the best 50th percentile facilities' means for the 2003 monitoring year. This mean plus two standard deviations is the proposed benchmark value. Monitoring values higher than this benchmark will demonstrate a need for better control of oil/grease at the facility and require the facility to submit a control plan. The analytical method required by the permit is EPA Method 1664 HEM-SGT. This method is specific for non-polar petroleum products such as diesel fuel, hydraulic fluid and lubricating oils. These petroleum products are expected to be the most frequent oil/grease components in boatyard stormwater runoff.

TSS is a pollutant generated during grinding, sanding and sand blasting operations associated with boatyard activities. A benchmark value 21.0 mg/L was derived from the 2003 monitoring data in the same manner as the oil/grease benchmark. Exceedance of this benchmark will demonstrate a need for better control of TSS at the facility and require the facility to submit a control plan.

Annual monitoring of stormwater was required in the first issuance of the Boatyard Permit to verify the effectiveness of best management practices. Compliance with the monitoring requirement was poor. The few discharges sampled at each boatyard failed to provide the feedback necessary to verify the effectiveness of best management practices or to characterize discharges. Ecology then determined that more than one sample per year was necessary. Therefore, Ecology required four samples per year in the reissued permit which is the current, administratively-extended permit. This permit renewal requires five samples per year. Four samples are required during the times the boatyard activity is highest (spring and fall) and one sample is required in January, the time of highest rainfall.

Specific test methods are listed in the current permit. Sampling is required to be conducted during the first flush of a storm. First flush is defined as the first thirty minutes of the formation of a discrete stormwater discharge. The pollutant concentrations are expected to be highest during this first flush. Stormwater sampling guidance for Permittees is provided in Appendix B.

Table 9. Stormwater monitoring requirements.

<u>Parameter</u>	<u>Minimum Frequency</u>	<u>Sample Type</u>
Oil & Grease ¹	September, October, January, April, May	grab
TSS	September, October, January, April, May	grab
Copper (total recoverable)	September, October, January, April, May	grab

¹The permit also requires that discharges shall not have, nor cause a visible oil sheen in

the receiving waters.

The permit requires a report of the sample results in the month following sampling.

Boatyards covered under this permit are required to adopt the BMP's listed in the permit if they are appropriate for their facility. Other BMP's which are specific for the facility are expected to be developed as required by the facility to meet the permit benchmark values. These BMP's are to be listed in a document called the Stormwater Pollution Prevention Plan (SWPPP). This plan is expected to be updated as necessary and it is a public document. The SWPPP also incorporates a monitoring plan, a spill plan, and weekly visual monitoring reports.

Vacuum sanding was identified as a BMP for boatyards in the fact sheet of the last permit but was not required in the permit. This permit requires vacuum sanding as an operational BMP. The economic analysis demonstrates there is no monetary penalty for utilizing this technology (Appendix E) and Ecology believes vacuum sanding controls copper dust much better than plastic screening. In addition, recent studies have shown human health effects from inhalation of copper dust. Vacuum sanding will better protect human health. Facilities not currently using vacuum sanding will have several months to institute use of this practice.

New boatyards are required to develop and implement the treatment system and BMPs as soon as they become operational.

The permit has a tiered system of requiring new BMP's and may require the installation of treatment BMP's. These include treatment devices such as filtering or settling devices. Stormwater treatment devices are given in the Stormwater Management Manual for Western Washington (ECY 99-15). This Manual is available on-line at: [http://www.ecy.wa.gov/programs/wq/stormwater/manual.html#How to Find the Stormwater Manual on the](http://www.ecy.wa.gov/programs/wq/stormwater/manual.html#How_to_Find_the_Stormwater_Manual_on_the). Volume IV deals with source control BMPs and Volume V deals with treatment BMPs.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will not cause a violation of established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Surface water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the maximum levels of pollutants allowed in receiving waters to be protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The U.S. EPA has promulgated 91 numeric water quality criteria for the protection of human health that are applicable to Washington State (40 CFR Part 131). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

REASONABLE POTENTIAL AND WATER QUALITY-BASED EFFLUENT LIMITS

This permit proposes both benchmarks and effluent limitations to protect water quality.

The USEPA and Ecology have determined that it is generally not possible to conduct a reasonable potential analysis for each facility covered under a general permit in the same manner as for an individual facility and still retain the benefits of a general permit. However, EPA and Ecology are mandated to protect water quality when authorizing discharges as noted above. To resolve this conflict, EPA derived the concept of "benchmarks" in general permits. Benchmark values are not water quality standards and are not permit limits. They are indicator values. Ecology considers values at or below benchmark as unlikely to cause a water quality violation. The benchmarks for this permit were derived using factors that are available to individual Permittees. The benchmarks and limits for this permit are derived as follows:

The benchmark for existing sources discharging to freshwater lakes (assume 25 mg/l hardness) = (acute criteria)*(1/percent dissolved)*(water effect ratio). With an acute criteria of 4.61 µg/l, a dissolved percentage of 30%, and a WER of 2.5 the benchmark is 38µg/l or .038 mg/l. There is no dilution factor assumed for these dischargers which is consistent with the directives of Chapter 173-201A.

The benchmark for existing discharges to freshwater rivers or rivers with tidal fluctuation = (acute criteria)*(1/percent dissolved)*(dilution factor)*(water effect ratio) = $(4.61) * (3.33) * (10) * (2.5) = 384 \mu\text{g/l}$ (0.384 mg/l).

The benchmark for existing sources discharging to marine waters = $(4.8 \mu\text{g/L}) * (\text{acute dilution factor}) * (1/\text{percent dissolved}) * (\text{water effect ratio})$. With an acute dilution factor of 10, a dissolved percentage of 30%, and a WER of 1.43, the benchmark is 229 µg/l (0.229 mg/l).

The sources of the variables used for deriving these benchmarks are:

percent dissolved copper in boatyard stormwater

Final Report, Shipyard AKART Analysis for Treatment of Storm Water. May 7, 1997. Hart Crowser.

For individual permits, a translator would be used that predicts the percent dissolved copper in the receiving water from the total recoverable effluent concentration. The translator is the ratio of dissolved/total recoverable observed in the receiving water. Because Ecology doesn't have data for all marine waters, an observed percent dissolved copper in the stormwater from shipyards stormwater was used to derive a benchmark. The data on the ratio of dissolved copper is not available for stormwater from boatyards but is available from shipyard stormwater and is assumed to be equivalent. This assumes the ratio of dissolved and bound copper remains constant upon entry into surface waters.

Marine water effect ratio (WER)

Effects of copper on marine invertebrate larvae in surface water from San Diego Bay, CA, Gunther Rosen¹, Ignacio Rivera-Duarte¹, Lora Kear-Padilla², and Bart Chadwick¹, ISPAWAR Systems Center San Diego, 53475 Strothe Rd., San Diego, CA 92152-6325

A water effect ratio is the amount of reduction in toxic effect due to particulates and organic material in the receiving water. The reference cited above is a review of several marine wer studies for copper. The range of nine values reported for marine wer's for dissolved copper was small. The values reported ranged from 1.43 to 2.77 for dissolved wer's. A value of 1.43 was used to calculate the benchmark.

Freshwater water effect ratio (WER)

Diamant 2004. Chehalis River WER report.

Diamond, et.al 1997. Environmental Toxicology and Chemistry, 16(7): 1480-1487.

Brungs, et.al. 1992. EPA 820R92100.

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Freshwater wer's for copper have reported values ranging from 1.1 to 15.3 (Brungs 1992).

A value of 2.5 which is 50% of the mean of the seventeen values reported by Brungs, et.al.

1992, and Diamond, et.al. 1997 was used to calculate the freshwater benchmark.

Marine dilution factor

Kellems, Barry. Summary of Mixing Zone Analysis, March 31, 2003. Presentation to the

Boatyard Advisory Committee. Hart Crowser.

Anise Ahmed, Ecology email, May 24, 2004.

Dilution factors are highly variable. The calculated acute dilution factors derived from a marine trade consultant and from Ecology calculation using different variable inputs. The values ranged from 1.6 to 80. Ecology determined the mean of acute dilution factors from individual permits is 30. A value of 10 was used to estimate the amount of mixing.

The water quality-based limitation for these discharges is a requirement to inspect the facility and improve the BMP practices when the benchmarks are not achieved.

Impaired Waters

Section 303(d) of the federal [Clean Water Act](#) requires Washington State periodically to prepare a list of all surface waters in the state for which beneficial uses of the water – such as for drinking, recreation, aquatic habitat, and industrial use – are impaired by pollutants. These are water quality limited estuaries, lakes, and streams that fall short of state surface water quality standards, and are not expected to improve within the next two years.

Waters placed on the 303(d) list require the preparation of [Total Maximum Daily Loads](#) (TMDLs), a key tool in the work to clean up polluted waters. TMDLs identify the maximum amount of a pollutant to be allowed to be released into a waterbody so as not to impair uses of the water, and allocate that amount among various sources.

Ecology's assessment of which waters to place on the 303(d) list is guided by federal laws, state water quality standards, and the state's 303(d) policy. This policy describes how the standards are applied, requirements for the data used, and how to prioritize TMDLs, among other issues. The goal is to make the best possible decisions on whether each body of water is impaired by pollutants, to ensure that all impaired waters are identified and that no waters are mistakenly identified.

Some boatyards intended to be covered by this general permit lie in several of the urban receiving waters listed for water quality violations of acute and chronic criteria for heavy metals such as copper, lead and zinc. Federal regulations prohibit any new source or new discharger to a waterbody listed on the 303(d) list if that new source or new discharger will cause or contribute to that impairment. Any boatyard not covered by the pervious permit and which discharges to a waterbody impaired for copper, lead or zinc will have to meet stringent

effluent limits derived directly from the water quality criteria. Waters listed for copper, lead and zinc are given in Appendix F of this fact sheet.

New discharges to waterbodies impaired at the point of discharge are required to meet effluent limitations at the point of discharge. New discharges have the opportunity to utilize state-of-the-art pollution control equipment. In addition, a listed waterbody has no dilution available to meet water quality standards.

Ecology believes the use of benchmarks, BMP's which are documented in a SWPPP, and limitations for discharges to impaired waters meets the regulatory requirements for protection of water quality. In order to meet the requirements of this permit, boatyard operators must monitor and enforce the activities which occur at their yards.

Ground Water

The treatment technology identified as AKART in an engineering report for the shipyard stormwater was discharge to an infiltration trench lined with metal-absorbent material. This treatment was called enhanced filtration (Hart Crowser 1997). Any discharge to an infiltration trench must be far enough back from surface water so as not to be deemed a surface discharge due to hydraulic continuity. In addition, the discharge must meet the ground water standards. The permit requires that this type of discharge be 200 feet from the water surface and meet a copper limit of 1000 µg/L. This limit is the ground water criteria for copper and should be obtainable with proper BMP's at the facility. Meeting the limit at the point of discharge to the treatment device eliminates the need for ground water sampling.

Sediment Quality Criteria

There is little data to judge the impact of boatyard activity on sediment quality. One study found sediment quality in two Puget Sound boatyard/marinas was well below current sediment quality criteria for copper, lead and zinc (Crecelius, E. et al 1989). No requirement was placed in the permit for sediment sampling. Ecology will be collecting sediment samples at several boatyards in 2005-2006 to determine the impact of boatyard stormwater runoff to sediment quality.

ECONOMIC IMPACT ANALYSIS

This is a renewal of an existing NPDES general permit. The new requirements of this permit include the development of a stormwater pollution prevention plan (SWPPP) and use of vacuum sanding. The development of a SWPPP has been estimated by one consultant (B. Kellems, Hart Crowser, 2004) to generally cost \$1000 to \$3000 for most industrial facilities. The cost of the SWPPP is proportional to the size and complexity of the operations at the boatyard. The USEPA requires a SWPPP in it's Multisector Industrial Stormwater General Permit.

The cost of implementation of vacuum sanding has been examined by Ecology (1999) and by US Joint Services (2003). Both of these analyses indicated the initial cost of vacuum sanding is recovered in a short time. These analyses have been reproduced in Appendix E of this fact

sheet.

Monitoring costs increase slightly with a proposed increase from 4 sampling periods to 5 sampling periods for stormwater runoff. Monitoring for discharges to non-delegated POTW's was increased from 2/year to 4/year to be equivalent with the sampling requirements of delegated POTW's.

The fee for permit coverage under this permit may be reduced for small businesses upon request.

ZEBRA MUSSELS

The permit contains reporting and treatment requirements for zebra mussels. Zebra mussels (*dreissena polymorpha*) have spread throughout the Great Lakes and other waterways in 18 states and two Canadian provinces think they were accidentally introduced into Lake Erie and St. Clair in the 1980's. This introduction has been attributed to a discharge of ballast water from a commercial freighter but other introductions are known to have come from hull biofouling.

Zebra mussels will continue to expand their range as naturally flowing water carries their young, known as veligers, downstream. Commercial and recreational vessels and equipment can also spread zebra mussels when they move from infested waters to uninfested waters. Adult mussels may attach to any hard surface and the veligers may be transported in water.

A list of potential carriers includes:

- | | |
|---------------------------------------|----------------------|
| * boats, trailers and other equipment | * live wells |
| * scientific equipment | * raw water |
| * Scuba and snorkel gear | * plants and animals |

Placing these items in uninfested waters without following precautions may lead to an accidental introduction of mussels. Any boats or vessels from outside the State of Washington should be carefully examined and all boats or vessels from east of the Rocky Mountains should be considered infected.

Water hotter than 110 degrees F will kill veligers and 140 degrees F will kill adult mussels.

Therefore the permit contains inspection, reporting and quarantine requirements to minimize the infestation of zebra mussels.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed general permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this proposed general permit be issued for 5 years.

REFERENCES

- 1) Kenneth C. Alexander, "Characterization and Treatability of Hydroblast Wastewater," University of Washington, August 1988.
- 2) "Best Management Practices for Ship and Boat Building and Repair Yards," Puget Sound Shipbuilders Association & Puget Sound Water Quality Authority, May 1990.
- 3) "Development Document for Shipbuilding and Repair - Draft," EPA 440/1-70/076-b, 1978.
- 4) Municipality of Metropolitan Seattle (METRO) 1992. "Maritime Industrial Waste Project - Reduction of Toxicant Pollution from the Maritime Industry in Puget Sound".
- 5) Stormwater Management Manual for Western Washington. Ecology Publication No. 99-15
- 6) Hart Crowser. Final Report, Shipyard AKART Analysis for Treatment of Storm Water. May 7, 1997.
- 7) Diamant 2004. Chehalis River WER report.
- 8) Diamond, et.al 1997. Environmental Toxicology and Chemistry, 16(7): 1480-1487.
- 9) Brungs, et.al. 1992. EPA 820R92100.
- 10) Kellems, Barry. Summary of Mixing Zone Analysis, March 31, 2003. Presentation to the Boatyard Advisory Committee. Hart Crowser.
- 11) Anise Ahmed, Ecology email, May 24, 2004.
- 12) Crecelius, E.A., T.J. Fortman, S.L. Kiesser, C.W. Apts and O.A. Cotter. 1989. Contaminant Loading to Puget Sound from Two Marinas. USEPA., Seattle, WA. NTIS PB90-130709.

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Appendix A--Public Involvement Information

The Department has tentatively determined to a general permit for boatyards. The permit contains conditions and effluent limitations which are described previously this fact sheet.

On May 4, 2005, Ecology filed a Public Notice of Draft with the Code Revisers Office to inform the public that the revised draft permit and fact sheet were available for review and comment; and to specify the dates and locations of public workshops and hearings on the proposed permit. On May 18, 2005, the public announcement was published in the Washington State Register (WSR 04-13-178), Aberdeen, Olympia, Everett, Bellingham and the Seattle Daily Journal of Commerce. An announcement was also mailed to all parties identified as interested parties and was made available on Ecology's website. Public workshops and hearings on the proposed permit were held in Lacey on June 21, 2004, and in Everett on June 22, 2005. The public comment period closed June 27, 2005.

The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the Ecology office listed below. Written comments should be mailed to:

Gary Bailey
Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

The public workshops and hearings on the draft general permit are scheduled to be held in Olympia, WA on June 21, 2005 and in Everett, WA on June 23, 2005. The purpose of the workshops is to explain the general permit, explain the changes from the previous permit, and answer questions in order to facilitate meaningful testimony during the hearing. The purpose of the hearings is to provide an opportunity for people to give formal oral testimony and comments on the proposed permit.

The June 21, 2005 workshop and hearing will be held at:

Department of Ecology Headquarters/Southwest Regional Office
300 Desmond Dr., Lacey, WA. 98503
(360) 407-6000

Directions Southbound: on I-5: Take Martin Way exit 109, turn left onto Martin Way, at the third traffic light turn right onto Desmond drive.

Directions Northbound: on I-5: Take Martin Way exit 109, turn right onto Martin Way, at the second traffic light turn right onto Desmond drive.

Once on Desmond Dr head uphill and at the intersection turn left and proceed along the front of the Headquarters building. Proceed past a stop sign at the main entrance and find the visitors parking lot on the left.

The June 23, 2005 workshop and hearing will be held at:

Snohomish County Public Utilities District HQ
2320 California Street, Everett, WA 98206
(425) 783-1000

Directions: South bound on I-5: Take exit 194, follow City Center signs onto Everett Avenue, westbound (right). Turn left at Virginia Avenue. Turn right at California Street.

Directions: North bound on I-5: Take exit 193, turn left onto Pacific Avenue. Turn right at Cedar, and then left onto Hewitt Avenue. Turn right at Virginia.

Both public workshops and hearings will begin at 7:00 p.m. and conclude when public testimony is completed.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, 360 407-6433, or by writing to the address listed above.

Appendix B-- Sampling Guidance

MANUAL GRAB SAMPLING REQUIRED UNDER THE GENERAL BOATYARD PERMIT

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See additional sampling guidance at www.ecy.wa.gov/pubs/0210071.pdf

INTRODUCTION

Follow the specific procedures required by your laboratory. As an aid to boatyard operators this appendix describes general procedures for collection of the grab stormwater samples using manual methods.

The objectives include the following:

- Characterizing stormwater discharges (e.g., average conditions, variability, ranges,
- Assessing the effectiveness of BMPs for stormwater control
- Detecting trends in discharge quality over time and between different locations

SAMPLING METHODS AND EQUIPMENT

Where site conditions allow, collect samples by holding the sample bottle (provided by the analytical laboratory) directly in or under the stormwater flow stream. Direct filling of the sample bottles eliminates the need for sampling equipment and reduces the risk of sample contamination. Therefore always directly fill the sample bottle from the laboratory. The sample container can sometimes be taped to a pole if necessary to reach the sampling point (a simple bracket fashioned from a bicycle pump holder can be used with some bottles). Some sample bottles may contain preservatives (added by the analytical laboratory); so if the flow at a given location is very rapid or turbulent, the bottles could overflow and preservative would be lost.

DEVELOP STORM EVENT SELECTION CRITERIA

Try to monitor a range of different storm conditions (i.e., amounts, durations, antecedent moisture). It is desirable to assess stormwater quality during different sizes of storms, in different seasons, etc. The Department recommends including sample of a first flush of stormwater following a dry period.

Catchment areas that have a high proportion of pervious surface may not produce much runoff from the first storm(s) that follow a long dry period. In this situation, a storm that meets minimum rainfall amount criterion may not produce sufficient runoff for monitoring. Therefore, you may need to consider probable soil moisture and surface water storage (if appropriate) when deciding whether to sample a forthcoming storm event, especially if the storm is expected to be a small one.

MONITORING PROCEDURES

Sample Collection Procedures

To save time during actual sampling events, it is recommended that you obtain the necessary sample bottles well ahead of time and complete the labels insofar as possible before monitoring. Then place the sample bottles for a given monitoring location in a clean, clearly-labeled ice chest.

Sample bottles and labels are usually obtained from the analytical laboratory. Grab samples must be used for the three stormwater parameters and the four parameters for pressure wash water discharges to the sanitary sewer.

The typical procedure for collection of a single grab sample is outlined below:

1. Put on clean latex or nitrile rubber gloves.
2. Fill in the label on the sample bottle. A typical sample label may contain the following information:

Project name and number, ·

Monitoring location ·

Sample ID (includes sample type, outfall location and number), ·

Name of sampling personnel,

Analyses to be performed and

Date and time of collection.

3. Collect a grab stormwater sample as follows:
 - (a) Remove the lid from the grab sample bottle, and place the lid top-down on a clean surface (so that inside of the lid does not get dirty).
 - (b) Avoid touching the inside of the sample bottle or lid during sample collection.
 - (c) Immerse the sample bottle directly in the storm water flow holding the bottle so that its opening faces upstream.
 - (d) Try to collect the sample from the horizontal and, if there is enough water depth, the vertical center of flow.
 - (e) Try to avoid stirring up bottom sediments and/or collecting unrepresentative floating material.
 - (f) If the sample bottles contain preservatives, be sure to avoid tilting or overfilling the bottle.
 - (g) Place the filled grab sample bottles into a cooler along with ice. The ice should be in sealed plastic bags to avoid leaks.
4. Record the time of grab sample collection on a sampling form, chain-of-custody form, or in a log book.
5. Pack the sample bottle(s) with bubble-wrap or other padding. Complete a chain-of-custody form and insert a copy in the cooler containing the sample bottle(s). Deliver or ship the cooler to the laboratory.

Grab Sampling for Oil and Grease

Because oil and grease are often present in stormwater in several different forms (e.g., as a surface film, an emulsion, or in some combined form), it can be difficult to collect a representative sample. The best collection point is at the point of maximum mixing in the conveyance system. Because these substances tend to adhere to surfaces, always collect the discharge directly in the laboratory sample bottle.

Appendix C—Statistical Data

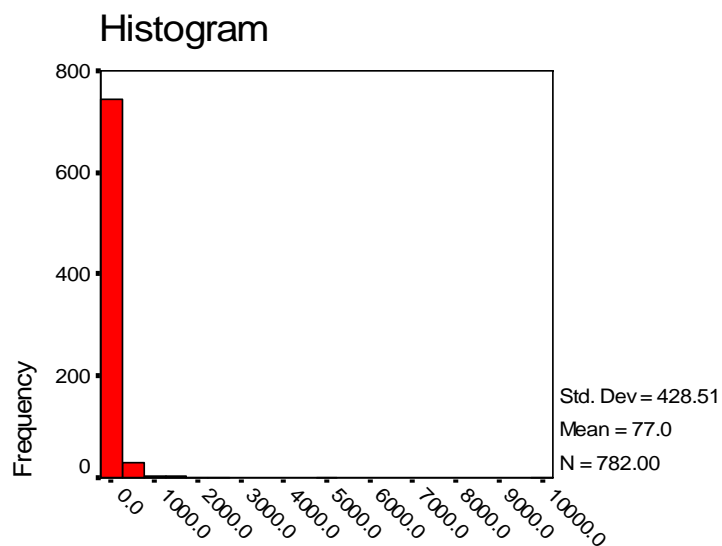
EFFLUENT DATA FOR COPPER - UNTRANSFORMED

Tests of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ug/L	.402	791	.000	.187	791	.000
a. Lilliefors Significance Correction						

Descriptives

ug/L			Statistic	Std. Error
	Mean		1404.33	200.624
95% Confidence Interval for Mean	Lower Bound		1010.51	
	Upper Bound		1798.15	
5% Trimmed Mean			712.30	
Median			410.00	
Variance		31837687.545		
Std. Deviation		5642.489		
Minimum		2		
Maximum		110000		
Range		109998		
Interquartile Range		918.00		
Skewness		13.369		.087
Kurtosis		218.108		.174



TSS 98-03

EFFLUENT DATA FOR COPPER – LOGNORMALLY TRANSFORMED

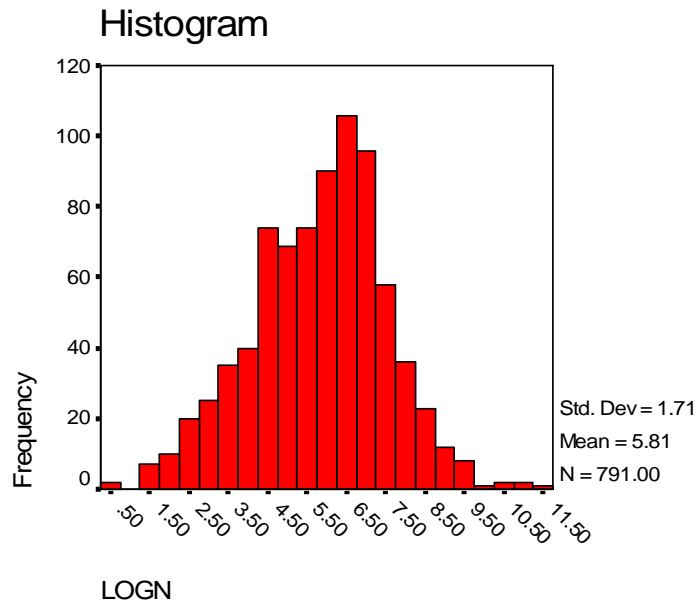
Descriptives

			Statistic	Std. Error
LOGN	Mean		5.81220907548281	.060766460861875
	95% Confidence Interval for Mean	Lower Bound	5.69292625150876	
		Upper Bound	5.93149189945686	
	5% Trimmed Mean		5.82962435865921	
	Median		6.01615715969835	
	Variance		2.921	
	Std. Deviation		1.709039832084415	
	Minimum		.693147180560	
	Maximum		11.6082356448	
	Range		10.9150884642	
	Interquartile Range		2.30258509299405	
	Skewness		-.169	.087
	Kurtosis		.086	.174

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
LOGN	.051	791	.000	.993	791	.001

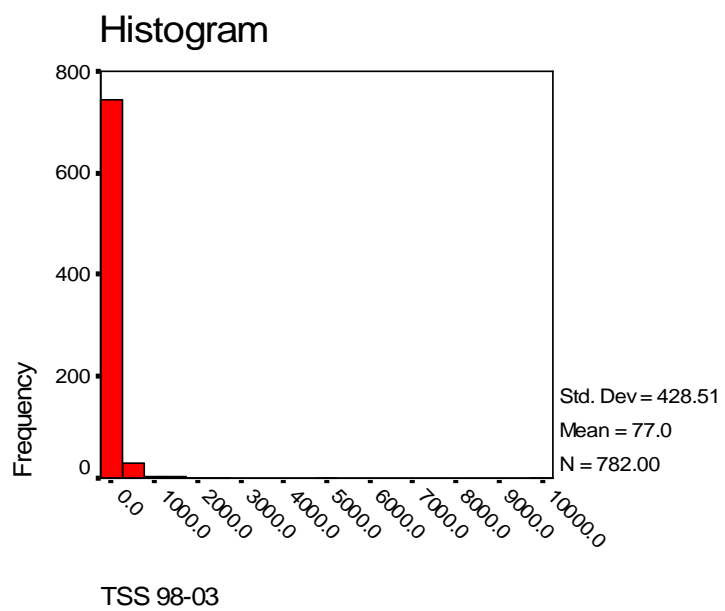
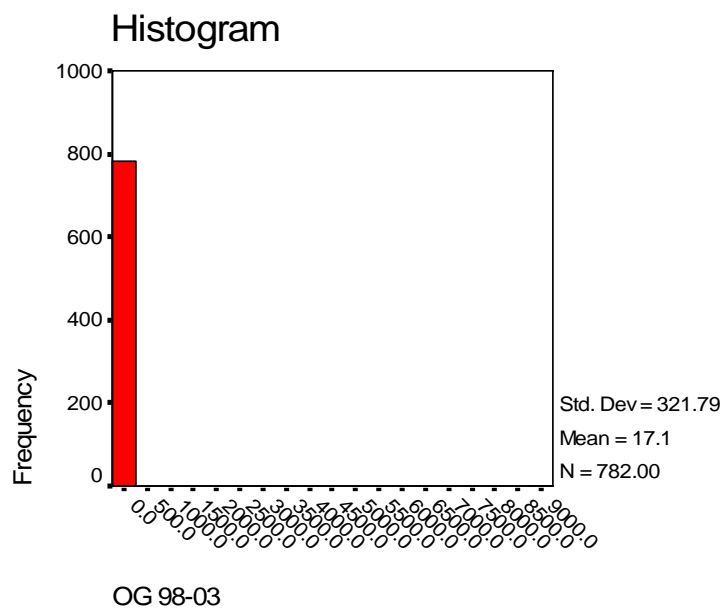
a. Lilliefors Significance Correction



EFFLUENT DATA FOR OIL/GREASE AND TSS UNTRANSFORMED

Descriptives

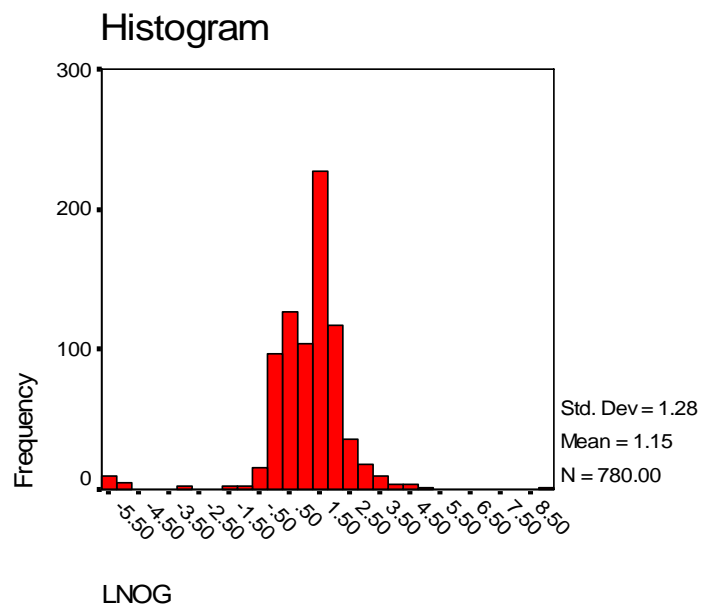
			Statistic	Std. Error
OG 98-03	Mean		17.06996	11.507219
	95% Confidence Interval for Mean	Lower Bound	-5.51878	
		Upper Bound	39.65870	
	5% Trimmed Mean		4.18988	
	Median		4.00000	
	Variance		103549.4	
	Std. Deviation		321.7909	
	Minimum		.000	
	Maximum		9000.000	
	Range		9000.000	
	Interquartile Range		3.62500	
	Skewness		27.925	.087
	Kurtosis		780.531	.175
TSS 98-03	Mean		77.03515	15.323519
	95% Confidence Interval for Mean	Lower Bound	46.95499	
		Upper Bound	107.11531	
	5% Trimmed Mean		34.24496	
	Median		19.00000	
	Variance		183621.6	
	Std. Deviation		428.5109	
	Minimum		.000	
	Maximum		10000.000	
	Range		10000.000	
	Interquartile Range		42.00000	
	Skewness		18.277	.087
	Kurtosis		391.053	.175



Descriptives

Descriptives			Statistic	Std. Error		
LNOG	Mean		1.15353478262842	.045900500332448		
	95% Confidence Interval for Mean	Lower Bound	1.06343146160244			
		Upper Bound	1.24363810365440			
	5% Trimmed Mean		1.21849455204086			
	Median		1.38629436111989			
	Variance		1.643			
	Std. Deviation		1.281931209542787			
	Minimum		-5.2983173665			
	Maximum		9.10497985632			
	Range		14.4032972229			
	Interquartile Range		1.02961941718116			
	Skewness		-1.757	.088		
	Kurtosis		11.157	.175		
LNTSS	Mean		2.87040881277452	.059352193226115		
	95% Confidence Interval for Mean	Lower Bound	2.75389963136876			
		Upper Bound	2.98691799418028			
	5% Trimmed Mean		2.88864841440935			
	Median		2.94443897916644			
	Variance		2.748			
	Std. Deviation		1.657616546667251			
	Minimum		-6.2146080984			
	Maximum		9.21034037198			
	Range		15.4249484704			
	Interquartile Range		2.07944154167984			
	Skewness		-.613	.088		
	Kurtosis		3.917	.175		
Tests of Normality						
	Kolmogorov-Smirnov		Shapiro-Wilk			
	Statistic	df	Sig.	Statistic	df	Sig.
LNOG	.137	780	.000	.800	780	.000
LNTSS	.048	780	.000	.959	780	.000
a. Lilliefors Significance Correction						

OIL/GREASE IN STORMWATER LOGNORMAL TRANSFORMED.



TSS CONCENTRATIONS IN STORMWATER LOGNTRANSFORMED

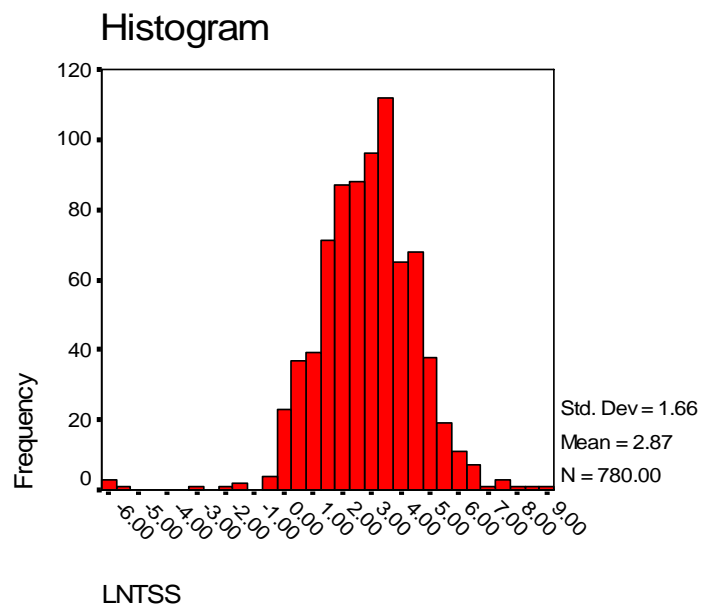


Table 4.
Shipyard
Stormwater
Metal Data

Cu (µg TR)	Zn (µg TR)	Pb (µg TR)				
410	4700	740	Copper (µg/L TR)		Zinc (µg/L TR)	
50	300	50				
90	570	130	Mean	377.8802469	Mean	1443.2716
80	400	40	Standard Error	77.08097014	Standard Error	189.37192
486	240	50	Median	220	Median	130
89	460	59	Mode	130	Mode	300
260	1800	120	Standard Deviation	693.7287313	Standard Deviation	1704.3472
120	650	83	Sample Variance	481259.5526	Sample Variance	2904799
140	720	170	Kurtosis	51.24738858	Kurtosis	9.3618741
510	5500	1300	Skewness	6.589984487	Skewness	2.6602181
24	220	70	Range	5886	Range	900
410	2300	1500	Minimum	14	Minimum	100
96	580	260	Maximum	5900	Maximum	1000
230	870	270	Sum	30608.3	Sum	11600
100	320	4.9	Count	81	Count	81
300	1900	620	Confidence Level(95.0%)	153.3961684	Confidence Level(95.0%)	376.8621
220	56	90				
360	990	200	378 * 0.27= 102.6		1443 * 0.47 = 678	
1600	3000	660	criteria = 4.8		criteria = 90	
480	610	68	ratio = 0.047		ratio = 0.13	
5900	10000	900				
50	2700	50				
1300	3900	500	Lead (µg/L TR)			
150	1200	40				
400	8000	50	Mean	202.9987654		
330	2000	60	Standard Error	35.71606049		
580	2700	25	Median	59		
490	2800	140	Mode	50		
320	1200	47	Standard Deviation	321.4445444		
130	3500	250	Sample Variance	103326.5951		
210	1100	26	Kurtosis	4.982314747		
140	700	29	Skewness	2.328270266		
94	520	25	Range	1495.1		
540	3000	170	Minimum	4.9		
340	1900	112	Maximum	1500		
890	2900	330	Sum	16442.9		
170	1600	19	Count	81		
360	2800	55	Confidence	71.07729467		

			Level(95.0%)
930	2000	150	
670	4200	75	203 * 0.24 = 49
200	670	50	criteria = 210
			marine (13.9 FW)
50	3000	60	ratio = criteria/diss
			metal.= 4.3
130	990	90	
90	200	40	
390	1900	50	ratio Lead/Copper =
			.54
290	980	62	
330	1200	25	Benchmark Cu
			Lake = 77ug/L
			(* .54*.24)=9.98ug/L
150	830	25	Benchmark Marine
			= 229ug/L(*.54*.24)
			= 29.7ug/L
92	390	30	
130	730	25	Meeting
			benchmarks for
			copper results in
			meeting
91	860	25	lead criteria in the
			effluent.
83	370	44	
33	130	25	
410	1400	150	
130	840	38	
420	1200	130	
310	870	44	
520	1500	120	
1400	3000	280	
880	2500	150	
340	670	46	
130	330	6	
390	590	47	
840	1300	79	
350	460	23	
460	510	28	
370	470	26	
230	1000	50	
22.4	42	912	
140	1000	13	
70	59	12	
66	10	10	
16	480	480	
99	11	11	
430	110	50	
17.9	42	877	

180	10	670
24	49	1200
81	700	10
14	36	870
160	560	22

Appendix D—Economic Analysis of Vacuum Sanding

Dustless Sanding Saves Money and Keeps Water Clean

In 1998, the Washington Department of Ecology, with the assistance of the Puget Soundkeeper Alliance, conducted a pilot project to assess all costs and environmental performance of two different bottom paint removal technologies. This demonstration project was co-sponsored by Mr. Neil Falkenburg of West Bay Marina, in Olympia, Washington. One side of the bottom of the project vessel was prepared with a vacuum sander while the other side was prepared with a traditional air rotary grinder. Then costs were compared.



The purpose of the demonstration was to determine if there were economic incentives to adopting dustless sanding technology in addition to the obvious environmental benefits. The NPDES Boatyard General permit is designed to control the release of pollutants into surface waters. The permit states:

When stripping, sanding, scraping, grinding, sandblasting, painting, coating and/or varnishing any portion of a vessel, all particles, oils, grits, dusts, flakes, chips, drips, sediments, debris and other solids shall be collected and managed to prevent their release into the environment and entry into waters of the state. Drop cloths, tarpaulins, structures, drapes, shrouding or other protective devices shall be secured around the vessel to collect all such material. The cleanup of all collected materials shall be routinely undertaken to prevent their release into the environment and entry into waters of the state. The use of vacuum sanders is recommended as a means to greatly reduce the amount of particulate released into the environment.

The cost assessment conducted found boaters using vacuum sanders to prepare the bottom of a 32 foot sailboat for repainting could save \$235 in material costs over the air rotary tool. The economics are different for the boatyard than for an owner working on his boat. The boatyard must purchase the equipment. The Fein vacuum extractor 9-55-13 costs \$250 and the Fein MSf 636-1 power head costs \$535, for a total system cost of \$785. The material cost savings on this project were \$170. The system could be paid off in as little as five jobs. If the boatyard rented out the equipment at a rate of \$50 per day, the system could be paid for in 16 rental days. If the purchase of the system coincided with the peak work season, the cost of the entire system could be recovered in just over two weeks.

Vacuum Sander



Traditional Air Rotary Tool



Need only dust mask and eye protection.	Need respirator and protective coveralls.
Sander safer and comfortable to use.	Safety equipment difficult to work in
Need only drop cloth	Need drop cloth and plastic shrouding
Clean with dust completely contained in filterbag	Messy with large volume of solid wastes generated.
98% dust-free, certified for lead abatement work.	More paint dust escapes due to positive pressure.
Sanding Pads last longer and plug less.	Sanding pads gum up rapidly
Labor - \$900.	Labor - \$800
Material - \$188 (\$54 for boatyard)	Materials - \$424 (\$224 for boatyard.)
Total Costs - \$1088	Total Costs - \$1224

Discussion

All work was performed by qualified boatyard personnel and assigned a flat rate of \$50 per hour. Boatyard permit requirements for tarping and shrouding were strictly adhered to. Material costs included duct tape, visqueen, sanding pads, filter bags, safety equipment and rental costs. Standard rental rates were used for equipment and respirator. Time to locate and rent equipment was not included. Labor costs were similar, but vacuum sanding took slightly longer at 18 hours verses 16 hours. This was attributed to the size difference between the 6" vacuum sander pad and the 8" disc of the air rotary tool. There were significant material savings with the vacuum sander. This was a result of 168 fewer sanding pads gumming up with melted paint from frictional heat and less plastic and tape needed to shroud the vessel, in accordance with permit requirements. Copper found in bottom paints is a major pollutant in stormwater runoff from boatyards; and a contaminant of marinas. The safe copper levels for our waters are in the low parts per billion while the copper in stormwater is measured in parts per million. The biggest problem is the do-it-yourselfer that walks away from a sanding job and leaves the mess to be blown by the wind or washed away by the rain. It makes no sense to spread the paint dust on the ground only to have to pick it up again. The volume of solid waste generated to contain the mess costs money to collect and dispose of. Vacuum sanders put 98% of the dust immediately into a filter bag, out of the elements and off others boats. (from Ship Shape, Ecology Publication No. 99-16)

PORTABLE VACUUM SANDING SYSTEM



Revision Date: 5/03

Process Code: Navy/Marines: IND-010-04, IND-015-12, IND-010-99, ID-03-99; Air Force: ST01, ST04; Army: DPT

Usage List: Navy: High; Marines: Medium; Army: Medium; Air Force: Medium

Alternative For: Chemical stripping; hand and mechanical sanding to remove paint from composite structures

Compliance Impact: Medium

Applicable EPCRA Targeted Constituents and CAS Numbers:

Lead (CAS: 7439-92-1), Chromium (CAS: 7440-47-3), Zinc (CAS: 7440-66-6), Toluene (CAS: 108-88-3), Xylene (CAS: 1330-20-7), Methyl ethyl ketone (CAS: 78-93-3), Acetone (CAS: 67-64-1), n-Butyl alcohol (CAS: 71-36-3), Phenol (CAS: 108-95-2), Chloroacetic acid (CAS: 79-11-8), and Dichloromethane (CAS: 75-09-2)

Overview:

A portable vacuum sanding system will effectively capture sanding residue and be mobile/light enough to be operated by one person. The unit can be used to sand composite structures such as radomes. The system integrates a vacuum cleaner with vacuum assist sanders for eliminating airborne toxins (including lead, chromium, and dust) while removing paint from both metallic and nonmetallic aircraft structures. The system incorporates three-stage filtration composed of a filter bag, prefilter, and HEPA filter.

The effect this technology has on pollution prevention is that the portable vacuum sander removes coatings and corrosion from composite or metal structures while capturing the solid waste. Vacuum sanding eliminates airborne particulate matter and potential lead dust exposure hazard. When compared to chemical paint stripping, this technology eliminates the generation of waste solvent.

OSHA 1910.1025 requires that sanding and grinding operations take place without exceeding the lead permissible exposure limit (PEL) of 50 g/m³. The vacuum sander helps meet this requirement. OSHA 1910.1025 states: "Where vacuuming methods are selected, the vacuums shall be used and emptied in a manner which minimizes the reentry of lead dust into the workplace." Therefore workers should exercise care when using and emptying vacuum units.

An example of one system is the Clayton cleaner/sanding system Model 660-DM-1000. This system incorporates one vacuum cleaner, two vacuum assist sanders, two vacuum assist grinders one package of 6 mil polyliners, one Y adapter, one package of filter bags, two packages of prefilters, and one tool caddy. All accessories are compatible with each other. In 1994, the Navy procured approximately 124 units for use on both shore-based and shipboard activities. In addition, several Air Force bases use the units. Currently, several vacuum sanding units are being used on composite radomes at Naval Station Mayport in Florida, but evaluation of the system is not complete.

Compliance Benefit: The portable vacuum sanding system eliminates the generation of waste solvent when compared to chemical stripping. This benefit may help facilities meet the requirements of waste reduction under **RCRA, 40 CFR 262; the Pollution Prevention Act (42 USC 13101-13109); and Executive Order (EO) 13148, *Greening the Government Through Leadership in Environmental Management***; and may also help facilities reduce their generator status and lessen the amount of regulations (i.e., recordkeeping, reporting, inspections, transportation, accumulation time, emergency prevention and preparedness, emergency response) they are required to comply with under **RCRA, 40 CFR 262**. It should be noted that the portable vacuum sanding system generates slightly more hazardous waste when compared to traditional hand sanding, but this factor may be counterbalanced by reduced employee exposure benefits. In addition, less hazardous materials (i.e., solvent) are required to be purchased and stored on site and therefore the possibility that the facility would meet any of the reporting thresholds of SARA Title III (**40 CFR 300, 355, 370, and 372**) is decreased.

The compliance benefits listed here are only meant to be used as general guidelines and are not meant to be strictly interpreted. Actual compliance benefits will vary depending on the factors involved, e.g., the amount of workload involved.

Materials Compatibility: The system can be used in most applications where chemical stripping, hand sanding, and mechanical sanding methods are used. No materials compatibility issues were identified.

Safety and Health: Airborne dust is a major safety and health concern with any sanding operations and can be essentially eliminated by using the vacuum sanding system. However, eye protection and hearing protection are recommended. The system is designed to be in compliance with **OSHA 1910.1025** for use during sanding and grinding operations.

Consult your local industrial health specialist, your local health and safety personnel, and the appropriate MSDS prior to implementing this technology.

Benefits:

- Reduces airborne pollution from current power sanding operations.
- Improves efficiency of operations.
- Improves personnel safety by collecting and containing paint dust particles.
- Provides a cost-effective means to remove paint from composite structures that cannot be removed from a ship.
- Reduces labor hours for manual sanding operations. z Portable unit.

Disadvantages:

- Capital equipment investment is required.
- Operator training is necessary.
- Operator time, maintenance requirements, handling, and disposal of waste varies with the material to be stripped.
- Quality of stripping is dependent on skill and experience level of the operator.

Composite substrate can be damaged.

Economic Analysis: Processing radomes and equivalent composite structures using the vacuum sanding system has shown some decrease in process time for a radome assembly. However the largest benefit is personnel safety. The vacuum and filtration process eliminate airborne toxins (including lead, chromium, and dust) generated when preparing coated surfaces for refinishing. The vacuum sanding system interfaces well with site operations, minimizes site clean-up, and provides a safer, healthier work environment.

Assumptions:

- Labor for sanding and grinding is the same for either system.
- Number of sanding disks or wheels is the same for either system.
- Filter bags are changed once per month taking 5 minutes.
- Prefilters are changed once per year taking 5 minutes.
- HEPA filters are changed once every ten years taking 5 minutes.
- Filter bags cost \$9; prefilters cost \$18; HEPA filters cost \$369.
- Labor rate = \$40/hr.
- Setup/Cleanup for conventional sanding/grinding operation takes 80 hrs/yr.
- Setup/Cleanup for vacuum sanding takes 40 hrs/yr.
- Waste disposal quantities are slightly higher for vacuum sanding because of the disposal of filters.
- Waste disposal costs \$1,200/ton or \$0.60/lb.
- 500 lbs. of waste material from sanding operations are generated/year.
- 25 lbs. of filters are generated/year.

Annual Operating Cost Comparison for Portable Vacuum Sanding and Conventional Sanding

	<u>Conventional Sanding</u>	<u>Portable Vacuum Sanding</u>
Equipment Cost:	\$0	\$4,955
Operational Costs:		
Setup/Cleanup Labor:	\$3,200	\$1,600
Maintenance Labor (changing filters):	\$0	\$43
Filter purchases:	\$0	\$163
Disposal:	\$300	\$315
Total Operational Costs:	\$3,500	\$2,121

Economic Analysis Summary:

- Annual Savings for Vacuum Sanding: \$1,379
- Capital Cost for Equipment/Process: \$4,955
- Payback Period for Investment in Equipment/Process: 3.6 years

[Click here](#) to View an Active Spreadsheet for this Economic Analysis and Enter Your Own Values. To return from the Active Spreadsheet, click the **Back arrow** in the Tool Bar.

NSN/MSDS:

Product	NSN	Unit Size	Cost	MSDS*
Vacuum Sander	5130-00-596-9714	ea.	\$222.75	N/A
Vacuum Sander	5130-00-889-8986	ea.	\$215.20	N/A

There are multiple MSDSs for most NSNs. The MSDS (if shown) is only meant to serve as an example. To return from the MSDS, click the **Back arrow on the Tool Bar.*

Approving Authority: Appropriate authority for making process changes should always be sought and obtained prior to procuring or implementing any of the technology identified herein.

Points of Contact: [For more information](#)

Vendors: This is not meant to be a complete list, as there may be other suppliers of this type of equipment.

Clayton Associates, Inc Farmingdale, NJ 07727 Phone: (800) 248-8650 Service: Dustmaster System Model 660-DM-1000

Nilfisk, Advanced America, Inc.
300 Technology Drive
Malvern, PA 19355
Phone: (800) 645-3475
URL: <http://www.nilfisk-advance.com/>

Tiger-Vac Inc. 14 Healey Ave. Plattsburgh, NY 12901 Contact:
Mr. Massimo De Pastena, Government Sales Phone: (800) 668-4437 ext. 226 FAX: (800) 668-4439 URL: <http://www.tiger-vac.com> Service: Industrial vacuum sanding kits and industrial

vacuum cleaners

Related Links: [Do You Remove Paint Using Conventional Sanding Or Chemical Paintstripping? -Navy Environmental Quality Initiative \(EQI\)](#)

Sources: *Mr. Massimo De Pastena, Tiger-Vac Inc., September 2002. Mr. Jim Clayton, Clayton Associates, Inc., March 1997. Mr. Chris Mahendra, Naval Air Warfare Center, Aircraft Division, March 1997.*

Supplemental:

Picture of Portable Vacuum Sanding System – Environmental Quality Initiative



Vacuum Sanding Requirements

Sander – 98% dust extraction

- Suitable for lead abatement work
- electric or air powered

Vacuum – Static water lift = 60 inches minimum

- Air flow = 116 cfs minimum
- Power = 900 watts minimum
- Filter = 1 micron cartridge minimum,
recommended = 5 micron bag filter, plus a 1 micron
cartridge filter, plus a 0.5 micron filter

Formatted: French (France)

Appendix E—List of Waters Not Meeting Standards for Copper and Zinc

List of waters impaired for copper and zinc (2004).

<u>Listing ID</u>	<u>Category</u>	<u>WRIA</u>	<u>Water Body Name</u>	<u>Parameter</u>	<u>Medium</u>	<u>Map Link</u>
9101	5	1	FEVER CREEK	Copper	Water	9101
7974	5	5	STILLAGUAMISH RIVER	Copper	Water	7974
13600	5	8	THORNTON CREEK	Copper	Water	13600
42309	5	9	DES MOINES CREEK	Copper	Water	42309
42352	5	9	DES MOINES CREEK, EAST TRIBUTARY	Copper	Water	42352
13815	5	9	HILL (MILL) CREEK	Copper	Water	13815
42342	5	9	MASSEY CREEK	Copper	Water	42342
42348	5	9	MASSEY CREEK	Copper	Water	42348
42320	5	9	McSORLEY CREEK	Copper	Water	42320
13839	5	9	NEWAUKUM CREEK	Copper	Water	13839
13765	5	9	NEWAUKUM CREEK	Copper	Water	13765
8673	5	10	WHITE (STUCK) RIVER	Copper	Water	8673
41773	5	1	BAKER CREEK	Zinc	Water	41773
41775	5	1	BAKER CREEK	Zinc	Water	41775
9106	5	1	FEVER CREEK	Zinc	Water	9106
41772	5	1	SQUALICUM CREEK	Zinc	Water	41772
41774	5	1	SQUALICUM CREEK	Zinc	Water	41774
41776	5	1	SQUALICUM CREEK	Zinc	Water	41776
41777	5	1	TOAD LAKE CREEK	Zinc	Water	41777
42308	5	9	DES MOINES CREEK	Zinc	Water	42308
42341	5	9	MASSEY CREEK	Zinc	Water	42341
42776	5	57	SPOKANE RIVER	Zinc	Water	42776

Appendix F—Miscellaneous Information



The appropriate Ecology Regional Office to apply for this permit is:

Northwest Regional Office
3190 - 160th Avenue S.E
Bellevue, WA 98008-5452
Phone: (425)649-7000/FAX: (425)649-7098

Southwest Regional Office Central Regional Office
300 Desmond Drive S.E., PO Box 47600
Olympia, WA. 98504-7775
Phone: (360)407-6300/FAX: (206)407-6305

Eastern Regional Office
North 4601 Monroe, Suite 100
Spokane, WA 99205-1295
Phone (509) 329-3400/FAX:(509) 456-6175

Appendix G. Response to Comments

November 2, 2005

BOATYARD GENERAL PERMIT COMBINED COMMENTS

The following comments were received by the Department of Ecology by email, letter or from public testimony. Some comments were scanned into this document by ocr software. Misspellings may be due to the software. Ecology's responses are given after the comment. Any response that noted a change in the draft permit is underlined>.

Mr. Bailey:

I will be unable to attend the public hearings regarding the Draft Boatyard General Permit. Please accept this email in lieu of personal testimony.

All of our major waterways are impaired by pollution. This situation negatively affects all of us in many ways.

Boatyards produce particularly dangerous pollution, which requires especially stringent regulation.

I urge the Department of Ecology to exercise its authority to the maximum extent possible to control pollution from these operations.

Our quality of life depends on your firm actions in this other regulatory functions.

Sincerely,

Bob Jacobs
720 Governor Stevens Ave. SE
Olympia, WA 98501
(360)352-1346

RESPONSE 1: Thank you for your comment and support.

Hello Mr. Bailey:

I have reviewed the boatyard permit and the comments made by Puget Soundkeeper Alliance. As the North Sound Baykeeper, I find that this draft permit fails to ensure compliance with water quality standards for stormwater discharges. As the Puget Soundkeeper has done a very effective job in elucidating the shortcomings of the permit, I wish to be on record as being in support of their comments.

Thank you for the work you have done in drafting the boatyard permit and for accepting our comments.

Sincerely,
Wendy Steffensen
North Sound Baykeeper
RE Sources
1155 North State Street #623
Bellingham, WA 98225
(360) 733-8307
www.re-sources.org

RESPONSE 2: Thank you for your comment. See responses to Puget Soundkeeper Alliance below.

From: Amy Bates [mailto:abates@healthybay.org]
Sent: Monday, June 27, 2005 12:12 PM
To: Bailey, Gary
Subject: Boatyard Comments.doc
Importance: High

Washington State Department of Ecology
Attn: Gary Bailey
PO Box 47600
Olympia, WA 98405

June 27, 2005

Department of Ecology
Attn: Gary Bailey
PO Box 47600
Olympia WA, 98405-7600

Dear Mr. Bailey,

Thank you for the opportunity to provide comment on the Boatyard General Permit. It is our understanding that this permit is applicable to boatyards in the state of Washington that are “commercial business engaged in the construction, repair and maintenance of small vessels”

Citizens for a Healthy Bay (CHB) is a non-profit organization that functions as an active voice for the Tacoma populace and residents within the Commencement Bay area by advocating for sustainable environmental stewardship in Commencement Bay, its surrounding habitat and waterways. Therefore, we appreciate the public comment process, and too, the opportunity to provide you with the sentiments of those within our scope.

Permit Summary: General Comments

We have serious concerns regarding the content of this permit as it relies heavily upon adaptive management and self-monitoring. Further, monitoring frequency is minimal while reporting benchmarks are extremely high and the criterion upon which the benchmarks are set being appears somewhat confusing. It is doubtful under these vague requirements that the strict stipulations outlined by the Clean Water Act would be upheld.

RESPONSE 3: We believe the draft permit meets the requirements of the Clean Water Act.

Specific Comments:

In an effort to keep the following comments clear and concise, specific references to the draft permit will be presented in the order they are listed in the permit, and the paragraph numbers are indicated.

Section S-1

Paragraph (b) states:

Boatyards that only provide the following services or conduct boatyard activities exclusively indoors **do not** require coverage under this permit:

- Use of tidal grids solely for emergency repair and marine surveys,
- Engine repair or maintenance within the engine space without vessel haul-out
- Topside cleaning, detailing and bright work
- Electronics servicing and maintenance
- MSD servicing and repair that do not require haul-out

- Vessel rigging, minor repairs or modifications to the vessel's superstructure and deck above the waterline which are not extensive (i.e., 25% or less of the vessel's surface area above the waterline).

Comment(s) – Engine repair or maintenance often include handling engine fluids, including oil, diesel, etc. Boatyards conducting regular repair and maintenance on vessels should be required to demonstrate that harmful engine fluids are not entering the waterway. For this reason, boatyards conducting certain types of engine repair or maintenance should be required to seek coverage under this permit.

RESPONSE 4: The permit has been changed to add the word “minor” to engine repair. All pollution cannot be controlled with wastewater discharge permits. The discharge of oil and harmful engine fluids to waters of the state is unlawful and enforceable. In-water work is typically minor and often not conducted by a nearby shore-based business. Ecology doesn't believe it's practical to issue wastewater discharge permits to all individuals and businesses that may be conducting work on boats and therefore it's not practical to define these activities as boatyard activities. Marina BMPs typically limit topside work to 25% as in-water work.

Section S-2

Paragraph (a) 2:

This section lists discharge limitations. A grab sample is required (once) during June, July, August and September for contaminants resulting from Pressure Wash Wastewater.

Comment(s) – The monitoring requirements used in this permit rely heavily upon adaptive management and minimize the WSDOE's role in ensuring that the stipulations of the Clean Water Act are adhered to. Monitoring requirements must be strengthened and the frequency increased. The feasibility of ensuring water quality stipulations with only 4 samples being obtained per year is highly unlikely.

RESPONSE 5: The monitoring frequency for pressure wash of 4 samples per year is equivalent to that required by delegated pretreatment municipalities. The monitoring frequency for stormwater is 5 samples per year. Ecology believes this is sufficient to characterize the pollutant concentration of stormwater runoff and demonstrate the effectiveness of pollutant control measures.

Paragraph (C) 2 – 6:

These sections list benchmarks for Oil/Grease; TSS; and Copper.

Comment(s) - The established benchmarks listed in sections 2-6 exceed the standards

outlined in the Fact Sheet (See Fact Sheet, section “Stormwater”). Too, there are serious concerns regarding the calculation methods used to determine these benchmarks. Calculations used to determine benchmarks should be clarified, and benchmarks set that better protect water quality.

RESPONSE 6: The benchmark for copper is higher than the water quality criteria (standard) for the reasons explained in the fact sheet. The calculations for benchmarks and their derivation are explicit in the fact sheet. There are no “standards” for TSS and oil/grease.

Paragraph (C) 7:

This section lists BMPs

Comment(s) We appreciate the incorporation of BMPs in the permit; however, the BMPs as listed in the permit may not be extensive enough to ensure that boatyards are brought into compliance with water quality standards.

RESPONSE 7: The permit incorporates a process known as adaptive management. If the mandatory BMPs are not sufficient to achieve limits or benchmark values, the Permittee must install additional operational or treatment BMPs. These are then logged into the SWPPP.

Paragraph (C) 8 – states:

Compliance with surface water quality standards means that stormwater discharges by a facility with permit coverage shall not cause or contribute to a violation of water quality standards in the receiving water.

Comment(s) – We appreciate the acknowledgement of water quality standards compliance. In lieu, certain aspects of the monitoring and benchmark requirements must be strengthened to demonstrate full compliance intent. The proposal of the exceedingly high benchmarks, adaptive management methods, and minimal monitoring requirements make it difficult to reasonably assume that violations of water quality standards will not occur.

RESPONSE 8: Ecology believes the limits, benchmarks, adaptive management process and monitoring requirements will assure compliance with water quality standards.

Section S-4

General Comment(s) – The level responses to values that exceed benchmarks uses an adaptive management response, wherein the polluter assumes the task of responding,

documenting, and evaluating their own method of incident response. This removes responsibility from the WSDOE to ensure that water quality violations do not continue or are appropriately being addressed. Too, the response levels are based upon excessively high benchmarks.

Summary:

This permit contains elements that are of increased concern as monitoring requirements are inadequate, benchmarks exceed water quality standards, and the implementation of adaptive management methods weakens water quality standards.

RESPONSE 9: See response number 8.

Thank you for the opportunity to comment on this permit.

Sincerely,

Amy Bates
Commencement Baykeeper

GIG HARBOR MARINA

Gig Harbor Boat Yard, Inc.

Phone 858-3535

P.O. Box 357 Gig Harbor Washington 98335

Mr. Gary Bailey
Department of Ecology
P0 Box 47600
Olympia. WA 98504-7600
Dear Mr. Bailey:

The Department of Ecology will be renewing the N.P.D.E.S. permit effective August 30, 2005.

It is imposing more rigid metal restrictions than our existing permit which we are finding difficult to meet as now written.

We all recognize that your work is absolutely necessary but the new goals set may be impossible to, at all times, meet resulting in penalties that are

costly.

Please give this letter some consideration

Sincerely yours,

Walter Williamson
President

RESPONSE 10: Ecology has proposed a permit with requirements to assure that water quality will be protected. We believe boatyards can meet the requirements of the permit.

People for Puget Sound

June 27, 2005

Gary Bailey
Department of Ecology
PO Box 47600
Olympia, WA 98504-7600
Telephone: (360) 407-6433
E-Mail: gbai461@ecy.wa.gov

Re. BOATYARD GENERAL PERMIT, NPDES General Permit No. WAG-030000

Thank you for the opportunity to comment on the Boatyard General Permit. People For Puget Sound is a nonprofit, citizens' organization whose mission is to protect and restore Puget Sound and the Northwest Straits, including a specific goal to protect and restore the 2,000 miles of Puget Sound shoreline by 2015.

As noted in the proposed Fact Sheet, the Boatyard General Permit covers 107 current boatyard facilities in Washington that discharge stormwater from areas used to renew the bottom paint on boats. Operations at boatyards have two main wastewater streams: pressure wash wastewater and stormwater runoff. Studies and sampling in 1998-2002 showed levels of copper in the stormwater/washwater from boatyards that exceeded state standards by several orders of magnitude. The primary source of the heavy metals in

pressure wash wastewater is from paint removed from the boat hull.

People For Puget Sound is concerned that pollutants from boatyards are a major toxic contaminant source for Puget Sound. The Boatyard General Permit must include requirements that will cause pollutants to stop entering Sound waters and sediments. This draft permit is not adequate and must be significantly strengthened. After years of education and voluntary implementation of BMPs, significant levels of pollutants still enter our waters from these facilities.

Since there isn't a safe level to protect aquatic life for toxic contaminants such as copper, we advocate that boatyard facilities should have zero discharge for toxic chemicals. The Department of Ecology should develop BMPs and training programs to help these facilities to accomplish zero discharge.

People For Puget Sound agrees with Puget Soundkeeper Alliance's comments, many of their comments are mentioned below as well as some that are amplified.

1. **Effluent Limits.** Boatyard discharges have reasonable potential to cause or contribute to violations of water quality standards and therefore this permit must include "effluent limitations" for these pollutants. Numeric water quality based effluent limitations should be set for copper, lead and zinc. "Benchmarks" set at unreasonably high levels are not an adequate substitute for numeric water quality based effluent limitations.

RESPONSE 11: As explained in the fact sheet, it is not practical to set water quality-based effluent limits in general permits because of the site-specific information required. The benchmarks as proposed in this permit use conservative values for factors that could be used to derive effluent limits for an individual facility. There can be no general permits without the use of benchmarks either explicitly or as a comparative tool for technology-based limitations. If Ecology must issue water quality-based effluent limits exactly equivalent to the process used for individual permits, there will no longer be general permits. This, in turn, will mean most facilities covered by general permits would probably not receive permits with the current number of permit writers in Ecology.

2. **Inadequate Monitoring.** Monitoring of additional contaminants and more frequent monitoring should be required. Zinc and lead have been identified as significant pollutants from boatyards and yet Ecology has not required monitoring for these pollutants. Additionally no benchmarks have been determined for lead and zinc.

RESPONSE 12: As the fact sheet explains, copper is used as an indicator

parameter for zinc and lead. This is a practice allowed and used by USEPA. Ecology expects the ratio of copper, zinc, and lead in the stormwater to be approximately the same ratio as shown in the fact sheet (Table 1) for the pressure wash wastewater. Copper has the highest concentration and the lowest water quality criteria of the three which makes it a suitable indicator for the other two metals. Zinc at the ratio in the stormwater indicated by the shipyard data is also of concern. Lead is of minor concern for facilities meeting benchmark values for copper (see Table 4 in Appendix C). This analysis shows that facilities meeting benchmarks for copper will be meeting the lead criteria in the effluent. Therefore, lead has been removed as a parameter of concern for listed waters.

The benchmarks for copper are too low to be protective of water and sediment quality. Further, other contaminants should be monitored as well during this permit cycle. If the facilities are found to have low levels of pollutants then these monitoring requirements could be relaxed.

RESPONSE 13: See response 11 above. The commenter does not suggest which other pollutants should be monitored.

3. **Data needed now.** The Fact Sheet states, “There is little data to judge the impact of boatyard activity on sediment quality. One study found sediment quality in two Puget Sound boatyard/marinas was well below current sediment quality criteria for copper, lead and zinc (Crecelius, E. et al 1989). No requirement was placed in the permit for sediment sampling. Ecology will be collecting sediment samples at several boatyards in 2005-2006 to determine the impact of boatyard stormwater runoff to sediment quality.” These data should be collected by each permittee as part of the permit. These data are needed now and in adequate quantities.

RESPONSE 14: Ecology has conducted additional sediment sampling in marine areas specifically to determine the contribution of boatyards and large marinas (Ecology, 2001). This survey found no exceedance of the sediment criteria. The information available to Ecology at this time does not suggest a high potential for sediment contamination from boatyards.

4. **303(d) listed waters.** Many boatyards discharge into areas that are listed on the 1998 Washington 303(d) list. The Fact sheet states that permittees must meet more stringent limits for new discharges. The Clean Water Act, however, specifies that all discharges must be more stringent in waters where impairments are found and the waters are listed on the 303(d) list for that specific parameter.

RESPONSE 15: The current 303(d) list is the 2004 list. We assume the new permit with benchmarks and vacuum sanding will assure existing boatyards will

not increase loading to impaired waters.

5. **In water work.** Ecology should ban all in-water work that might release pollutants.

RESPONSE 16: The permit eliminates all direct over-water work (S2.A.7.c.). The draft permit mistakenly included two paragraphs from the previous permit. These paragraphs have been deleted. Ecology believes all significant amount of surface preparation or painting should be done on land where it can be properly controlled. The permit has been modified to allow 25% topside or superstructure work where decks will form one catchment surface.

6. **BMP menu.** The permit should prescribe BMPs that will reduce pollutants rather than allow the facility to pick and choose. Ecology should prescribe BMPs that must be included in SWPPPs and implemented, unless the permittee demonstrates that an alternative BMP has equivalent performance in a process open to public comment and opportunity for appeal. Further, all outdoor work should be done under a cover such as a canopy tarp to ensure that all particulate matter is not washed out.

RESPONSE 17: The permit lists BMPs that are mandatory for facilities where they are applicable, including a new requirement for vacuum sanding. Conducting all work under cover is an option for facilities which are not otherwise able to meet the benchmarks.

7. **Dilution.** People For Puget Sound strongly opposes mixing zones (or dilution factors) for toxic contaminants such as copper, lead and zinc. The Fact Sheet implies that dilution factors are being used to calculate benchmarks. The use of dilution factors is not protective of aquatic life in Puget Sound.

RESPONSE 18: An assumed, conservative dilution factor was used to derive a benchmark for some categories as explained in the fact sheet.

8. **Pressure washing definition clarification.** Pressure washing is a major source of pollutants in boatyards. The definition of pressure washing should include any methods of scrubbing and rinsing, not only use of a pressure washer and “hand scrubbing and rinsing with low pressure water from a hose.”

RESPONSE 19: The word mechanical has been added to the definition.

Puget Sound has been under assault by activities such as those at boatyards for decades. People For Puget Sound believes that these pollutants can and must be stopped now. No

copper, lead, zinc or other pollutants should be allowed to leave boatyard facilities (in pressure wash water or in stormwater) in levels that exceed water quality standards. It is not an undue financial hardship for these facilities – which rely on a clean and healthy Sound to support their commercial and pleasure boating-based business – to stop allowing pollutants off their sites.

We look forward to continuing to work with you on this important permit. Please call me at (206) 382-7007 if you have any questions.

Sincerely,

Kathy Fletcher
Executive Director

From: Rolind27@aol.com[SMTP:ROLIND27@AOL.COM]
Sent: Monday, June 27, 2005 7:57:01 PM
To: Bailey, Gary
Subject: Boatyard permit

Dear Mr. Bailey:

I am really unhappy to hear from my local Boatyard that the D. O. E. is adding more BMPs and restrictions to the boatyards.

We are boaters and have worked hard to clean up our acts and abide by the current rules. Now we hear you want more! Please be realistic! If you drive the few boatyards that are left out of business, how will we maintain our boats???

I suppose we could find a piling on a remote beach somewhere and do our work on a low tide like my grandpa use to do. That would be a real shame not to mention very environmentally unfriendly. With all the effort we put into keeping a clean area each time we haulout, how can we possibly still be a source of pollution???

Please be realistic and leave well enough alone!

Sincerely L. M. Craig
Concerned boater!!!!

RESPONSE 20: Thank you for your efforts to maintain clean water. The data submitted by the boatyards indicates some may be causing pollution.

From: Kris Johnson[SMTP:FIREFIGHTERJOHNSON@HOTMAIL.COM]
Sent: Monday, June 27, 2005 8:11:30 PM
To: Bailey, Gary
Subject: Boat yard permit

I am worried that proposed changes to the boat yard permit will cause prices to rase out of my budget or put my local boat yards out of bussiness.

Either way boating for low and middle income boats will be no more. I believe in protecting our enviroment but when you single out boatyards which are vital to my favorite past time it seems unfair. I just fiinished my yearly haulout, I had to follow three pages of rules, the presurewash water was recyled, my boat sat on a plastic tarp, I used a vacume sander, and rolled the paint on. I fail to see the harm boatyards are causing. It seems they are going out of their way to protect the enviroment. Yet paint that sluffs off in the water is still legal, divers can scrub in paint while in the water is still legal (go watch it sometime it makes a big cloud of color). I can only admagin what is dumping into bay from the citys big strom drain pipes. These are examples are obibvious polluters yet it seems you are currently foused on a small group of boatyards.

Thank you,

Kristopher Johnson

RESPONSE 21: Thank you for following the proper BMP's while repainting your boat. It is not legal for divers to clean ablative (soft) copper-based bottom paints and we will be releasing a document for divers which advises them of the practices they must follow. Pollutants from storm drains are being brought under control by the municipal stormwater general permit currently in development. See also Response 143.

From: Jason Sanford[SMTP:JASON@GONNASONBOATS.COM]
Sent: Tuesday, June 28, 2005 10:18:37 AM
To: Bailey, Gary
Subject: Storm Drain Filters

To whom it concerns;

By asking all boat yards to catch, clean and filter all storm water is likely to put all the smaller yards out of business. The physical cost of the permits alone is expensive enough yet you are asking that they now install a entire filter system. There are plenty of other issue's to address as far as protecting our environment that fall into the same category of storm water. Look at the city of Tacoma and the storm water off the streets. You want to tell me that all the oil droppings from the cars and contaminants that build up on the streets is worse or shouldn't be looked at. All of those pollutants get washed off by rain water and end up in the water just like everything else. I'm all for doing what's best for the environment however I think its best to look at the big picture and try not to single out anyone as it appears you are trying to do. Boats is a major part of the Northwest and imposing this new requirement would greatly decrease the amount of boaters in the Northwest.

Thank You,

Jason Sanford

RESPONSE 22: This permit requires boatyards to control the pollutants coming off their yards. There are many ways to do this beside filtration of the stormwater. The city of Tacoma will also be receiving a renewed stormwater permit which requires control of stormwater pollutants.

Comments on Draft Boatyard General Permit
Prepared on Behalf of the Northwest Marine Trade Association (NMTA)

Barry Kellems, P .E. Blasland, Bouck & Lee, Inc. 2300 Eastlake Avenue East, Suite 100 Seattle,
W A 98102 206-325-5254

June 23, 2005

General Comment

During my service on the Advisory Committee over the past three years, my observation has been that most in the boatyard industry are committed to protecting the environment through proper management of stormwater. The draft permit contains the requirements-including benchmarks, mandatory best management practices (BMPs), and corrective actions as needed - to help bring the entire industry into compliance. However, the boatyards do not have the specialized staff to effectively interpret and implement the permit as it is currently written. The comments provided below are offered to clarify and

improve the permit. Effective implementation of the permit will be very important and, for that reason, the NMTA looks forward to working with Ecology to ensure that timely feedback (report cards), training opportunities, and incentives for boatyards to participate in the training are provided.

There has been much discussion regarding the copper concentrations measured in boatyard stormwater during the previous permit cycle. The highest copper concentrations presented in the fact sheet clearly do not represent stormwater concentrations at a boatyard where operational BMPs are implemented. It is probable that many of the highest copper concentrations were due to sampling anomalies. The first objective at boatyards experiencing high copper concentrations should be effective implementation of operational BMPs, combined with accurate and representative sampling of stormwater. If the benchmarks are exceeded after these actions are taken, stormwater treatment should be considered, but only if it can be implemented at a reasonable cost that will not result in economic hardship or force the boatyard out of business. This is in accordance with the State of Washington regulatory concept of AKART (or "all known, available, and reasonable methods of prevention, control, and treatment"). The most current methodology that can be reasonably required shall be used for preventing, controlling, or abating the pollutants associated with a discharge.

Specific comments on the draft permit and fact sheet are offered below.

S.2.C. Stormwater Limitations and Benchmarks.

The use of benchmarks is appropriate and consistent with state and federal regulation of stormwater discharges under general permits. However, appropriate dilution factors were not used in developing the copper benchmark values described in the fact sheet (pg. 18). Specifically:

3) Facilities discharging to Lakes - The draft permit states that no dilution is allowed, consistent with Chapter 173-201A. However, Chapter 173-201A does in fact allow a mixing zone when conditions are such that other siting, technological, or managerial options that would obviate the need for a lake mixing zone cannot reasonably be achieved. This is another way of stating the concept of AKART (or "all known, available, and reasonable methods of prevention, control, and treatment"). AKART in the form of BMPs is required by the boatyard general permit, and the performance of the BMPs will be confirmed through compliance with the benchmarks. Because all necessary and reasonably achievable options will be implemented to attain the benchmarks, a mixing zone should be allowed for facilities discharging to Lakes.

4) Facilities discharging to Rivers - An acute dilution factor of 10 is used, although the source of this value is not cited. The same reference that was used to support the marine dilution factor (Kellems, Barry. *Summary of Mixing Zone Analysis*, March 31, 2003) included a calculated range of acute dilution factors (14 to 66) for Foss Shipyard on the Ship Canal in Seattle. These values are representative of a river hydraulic regime. A

reasonable dilution factor for a facility discharging to a river is 20.

5) Facilities discharging to Marine Waters - An acute dilution factor of 10 is used based on information from three sources. However, the first reference cited (Kellems, Barry. *Summary of Mixing Zone Analysis*, March 31, 2003) presented an acute dilution factor of 80 for a shipyard in Bellingham, Washington discharging to marine waters. By the process of elimination, the second reference cited (Anise Ahmed, Ecology e-mail, May 24, 2004) must have reported a value of 1.6 (although it is unclear how the mixing zone calculations could yield a number so close to unity). And the third source cited is the mean of acute dilution factors (30) from Ecology's permit database, which was not attributed to either marine or river conditions. A simple average of the three values (80, 1.6, and 30) is 37. A reasonable dilution factor for a facility discharging to marine waters is 30.

RESPONSE 23: Thank you for your comments on dilution factors used to calculate the benchmarks. While a higher dilution factor may be appropriate for some of the boatyard facilities if we were issuing individual permits with effluent limits, in developing the general permit, Ecology was conservative when developing benchmarks on whether or not to use a dilution factor and in the value of the factor when one was used.

S.2.C.7.a.

Mandatory BMP - Use of Vacuum Sanders by Sept. 2005.

The NMTA agrees that the vacuum sander technology makes a good mandatory BMP and will help to reduce copper concentrations in stormwater at boatyards. However, completely prohibiting grinders will negatively impact boatyard operations. Certain large paint removal operations cannot be practicably accomplished using the small vacuum sanders currently available on the market. Therefore, the use of grinders should be allowed on large paint removal projects, as long as the entire work area is enclosed and the enclosure is under negative pressure. In addition, the implementation date should be tied to the effective date of the permit, i.e., 90 days following the effective date.

RESPONSE 24: Our analysis (Ecology Publication No. 99-16) indicated that vacuum sanding did take slightly longer than air rotary grinding/tarpping but overall the costs of vacuum sanding were still less than grinding. Larger boats require much larger tarping. Other vacuum paint removal tools such as the paint shaver[®] (www.paintshaver.com) may be even more rapid than current vacuum sanding methods and still meet our criteria for vacuum sanding.

The compliance date has been removed. Ecology has observed that most boatyards are already using vacuum sanders so there is no need for a compliance period.

S.2.C.7.c.

In-Water Vessel Maintenance and Repair.

The draft permit prohibits all cleaning, repair, modifications, surface preparation, or coating of any portion of a vessel's hull while the vessel is afloat. The previous permit allowed repairs, modifications, surface preparation, or coating of a vessel's hull on less than 25% of the surface area above the waterline. Interestingly, the 25% rule is still included as an exception for permit coverage under SI.B. This means that such work can still be conducted at other facilities, such as marinas, but not at boatyards. The previous permit was silent on partial hull cleaning above the waterline. Because prohibiting these activities will negatively impact boatyard operations, minor work with proper containment should be allowed. The documented impact of copper in boatyard stormwater does not support a need to restrict minor in-water repair work at boatyards.

RESPONSE 25: Language authorizing work on less than 25% of the surface area above the waterline, excluding hull work and direct over water work, has been added to the permit.

S.2.C.7.f.

Paint and Solvent Use.

The draft permit prohibits all painting over water. The previous permit allowed painting over water with certain limitations. Because prohibiting these minor activities will negatively impact boatyard operations, minor work with proper containment should be allowed. The documented impact of copper in boatyard stormwater does not support a need to restrict minor over-water painting work at boatyards.

RESPONSE 26: The draft permit has been modified to allow minor repainting such as vessel ID numbers with non-toxic paints.

S.4

Response to Monitoring Values Which Exceed Benchmarks.

The Level Three Response calls for preparing an Engineering Report within three months of the time that six samples exceed the benchmark and implementing corrective action within 12 months of report approval. The Level Three Response:

- is not consistent with S.5.A.2 (Enhanced/Additional BMPs), which calls for implementation of capital BMPs within six months; and
- does not represent a reasonable schedule given the need to fund, design, procure, permit, and construct a treatment/structural BMP.

The schedule for implementation should be timely and should be presented in the Engineering Report.

RESPONSE 27: The permit section S5.A.2. applies to one to three exceedances of benchmarks. The level two or three responses apply with four to six exceedances. A sentence has been added to Level Three Response to clarify the Level Three Response does not follow the process of S5.A.2.

The level two response with four exceedances should begin the planning process so the time frames of the level 3 response (implementation within 12 months of acceptance of the engineering report) can be met.

Fact Sheet, page 7.

The boatyard stormwater runoff data for copper presented in Table 2 do not represent actual stormwater discharges for typical boatyards. The highest numbers (greater than 1,000 µg/L) are in the typical range of pressure wash water rather than stormwater. This observation is further supported by the data in Table 7 of the Fact Sheet, which shows that 95% of all copper concentrations in stormwater at two shipyards where operational BMPs were in place were below 529 µg/L. It is probable that many of the highest copper concentrations presented in Table 2 are due to sampling anomalies. The first objective at a boatyard experiencing high copper concentrations should be effective implementation of operational BMPs combined with representative sampling of stormwater. According to a number of boatyards serving on the Advisory Committee, little or no sampling guidance was provided with the previous boatyard permits, and no feedback was provided on what constituted a problem copper concentration. I commend Ecology for issuing the Stormwater Sampling Guidance Document in December 2002 and recommend that it be made an attachment to the boatyard general permit, not just a web link in Appendix C, as it is in the draft permit. The use of benchmarks in the draft permit will provide criteria for the boatyards to gauge the effectiveness of their SWPPPs, but Ecology should also provide feedback (as in a "report card") to those boatyards that experience benchmark exceedances. This will eliminate boatyard operator uncertainty regarding "what the data mean", which appeared to be prevalent during the previous permit cycle.

RESPONSE 28: In the interest of saving paper, we have added a box on the new application which requests that Ecology send a paper copy of the Stormwater Sampling Guidance with the certificate of coverage. A link to the document has also been posted on the Boatyard General Permit page.

Ecology believes the benchmarks and the response required of a boatyard to the exceedance of a benchmark should be sufficient feedback to boatyard operators. Ecology is working to make our data base of compliance data accessible to the public. Boatyard operators would then be able to compare their stormwater data to other facilities.

Fact Sheet, page 10.

There is no reference for the source of the data in Table 7. The source of the data in Table

7 is Reference #6 (Hart Crowser, 1997). These data are based on three shipyards (six separate outfalls) for the period of record 1995-1996.

RESPONSE 29: Thank you for the clarification.

Fact Sheet, page 20.

The definition of enhanced filtration presented in the fact sheet is incorrect. The term "enhanced filtration" was used in the Shipyard AKART Report (Hart Crowser, 1997) to describe innovative filtration media that could be used in place of sand to remove dissolved metals from stormwater. The media is typically placed in a radial-flow cartridge, with several cartridges installed in a vault. This technology has now been commercialized under the trade name StormFilter. On January 26, 2005, Stormwater Management, Inc. achieved a General Use Level Designation from Ecology for its StormFilter technology as a basic stormwater treatment technology. Therefore, this technology is not specific to groundwater discharge, as stated in the fact sheet. In fact, placement of the metal sorptive media in an infiltration trench has not been demonstrated. Removal and disposal of spent media from an infiltration trench would pose an O&M challenge. However, some shipyards do infiltrate stormwater to the ground after passing the water through a wet vault to provide gravity settling. The groundwater discharge limits can be met using this approach and further treatment of dissolved metals using filtration or other methods has not been required. Therefore, the discussion of enhanced filtration as an appropriate treatment prior to infiltration is misleading and should be clarified.

RESPONSE 30: Thank you for the clarification on the term enhanced filtration. The term has been changed to infiltration and bio-infiltration. This corresponds to the stormwater treatment options presented in *Stormwater Management Manual for Western Washington, Volume V - Runoff Treatment BMPs*, Ecology Publication 99-15. We believe the removal of metals will be similar to End-of-Pipe Sand Filtration Treatment as discussed in Hart Crowser 1997 and in the range of 38 to 81% removal.

Fact Sheet, page 20 - Economic Impact Analysis.

This analysis is incomplete, because it does not include the economic impact of preparing an Engineering Report or of implementing BMP improvements to meet benchmarks. Although a range of costs is presented for preparing a Stormwater Pollution Prevention Plan, those costs represent only the initial investment and do not include implementation, training, inspections, and record keeping. If treatment is required to meet benchmarks, the cost could be significant, and that cost should be included in the economic impact analysis. The cost to treat stormwater for a new 1-acre commercial development has been estimated by Ecology to range from \$280,000 to \$570,000 (Cost Analysis, Washington Department of Ecology, *Year 2001 Minimum Requirements for Storm water Management, 2001*). Clearly, such a cost would significantly impact any boatyard

needing to treat stormwater.

RESPONSE 31: Thank you for the information. Ecology did not intend to conduct a full economic impact analysis with all the possible scenarios but rather to simply indicate some increased cost associated with this permit. All boatyard facilities were required to comply with water quality and technology-based (federal) requirements in the previous two permits. Ecology has adopted the requirement of a Stormwater Pollution Prevention Plan (SWPPP) to assure BMPs are properly implemented. A SWPPP is also required in the EPA Multi-Sector General Permit to comply with requirements of the Clean Water Act. The SWPPP and any required treatment are necessary requirements to comply with federal law.

June 27, 2005

Mr. Gary Bailey
Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

Dear Gary:

Thank you for this opportunity to provide comments on the Draft Boatyard General Permit.

The Puget Soundkeeper Alliance (PSA) is disappointed that few if any changes in the draft permit were made in response to our comments on the preliminary draft.

INTRODUCTION AND GENERAL COMMENTS

The draft "Boatyard Waste Discharge General Permit National Pollutant Discharge Elimination System (NPDES)" is terribly flawed in its general concepts, its organization, and its wording. Ecology should scrap this draft and start from scratch.

Comment 1. This permit would fail to ensure compliance with water quality standards for stormwater discharges. The available information indicates that boatyard discharges have reasonable potential to cause or contribute to violations of water quality standards. Therefore, in compliance with 40 C.F.R. § 122.44(d), this permit must include "effluent limitations" for these pollutants. "Effluent limitations" are restrictions on quantities, discharge rates, and concentrations of pollutants discharged. 40 C.F.R. § 122.2.

Instead, this permit proposes an inadequate "response to monitoring values which exceed

benchmarks” scheme based on an inadequate monitoring regime that is unlikely to result in compliance with water quality standards. The benchmarks included in this scheme as triggers are so high that discharges very likely to cause or contribute to violations of water quality standards may be well below the proposed benchmarks. In addition, while Ecology recognizes that, in addition to copper, lead and zinc are discharged from many boatyards at levels of concern, there are no stormwater monitoring requirements or benchmarks for lead and zinc. Furthermore, the proposed sample frequency is manifestly inadequate given the seriousness of the concerns about the quality of boatyard stormwater discharges. This is effectively a scheme to provide permit protection when discharges fail to comply with water quality standards.

The “response to monitoring values which exceed benchmarks” scheme is also inadequate because it constitutes a compliance schedule that not only fails to ensure compliance with water quality standards within three years as required by the Clean Water Act, but it fails to ensure compliance with water quality standards at all. See, *Puget Soundkeeper Alliance v. Ecology*, PCHB Nos. 02-162, -163, and -164, Order Granting Partial Summary Judgment (6/6/03) at XII – XXII.

While the permit would include a narrative prohibition on stormwater discharges that cause or contribute to violations of water quality standards, this condition cannot legally or practically serve as an adequate backstop to ensure that discharges “comply strictly” with water quality standards as the Clean Water Act requires. *Defenders of Wildlife v. Browner*, 191 F.3d 1159, 1165 (9th Cir. 1999). If such a narrative water quality based effluent limitation could be considered sufficient here, the same reasoning could defend its substitution for numeric water quality based effluent limitations in any permit for which there are no formal effluent limitation guidelines. The Clean Water Act demands more of NPDES permits. See *S. Florida Water Mgmt. Dist. v. Miccosukee Tribe of Indians*, 541 U.S. 95, 124 S. Ct. 1537, 1541 (2004) (“Generally speaking, the NPDES requires dischargers to obtain permits that place limits on the type and quantity of pollutants that can be released into the Nation's waters.”). Even if such a narrative water quality based effluent limitation could lawfully be substituted for numeric effluent limitations, it would have to be coupled with monitoring requirements that would reasonably indicate when it was violated, far from which are the monitoring requirements in this permit.

Question 1.1 Given these concerns, how does this permit ensure that the discharges it authorizes will not cause or contribute to violations of water quality standards?

RESPONSE 32: As explained in the fact sheet, this permit utilizes a narrative requirement, best management practices, effluent limits, and benchmarks to meet the technology-based and water quality-based requirements of the Clean Water Act and Chapter 90.48 RCW.

Question 1.2 How are the monitoring requirements sufficient to determine compliance with the narrative water quality based effluent limitation?

RESPONSE 33: See response 5.

Comment 2 The preliminary draft permit's approach to AKART is also seriously deficient. Ecology's position that implementation of regular BMPs constitutes AKART for boatyards denies reality. After years of Ecology NPDES permitting requirements to implement BMPs, levels of pollutants currently discharged by boatyards continue to far exceed expected or reasonably achievable levels. From this, we know that some treatment – at least that known as “treatment BMPs” – should be required. In addition, shipyards, including the largest in the state with the most stormwater to manage, have all moved to stormwater treatment facilities or discharge to municipal sewage treatment plants.

Question 2.1 How does the permit implement AKART?

RESPONSE 34: This permit requires vacuum sanding as a new mandatory BMP. The development and maintenance of a SWPPP in the permit has additional requirements for procedural BMPs. BMPs were determined to be AKART in the previous permits. In general, USEPA and Ecology have determined that BMPs, source control and prevention are the most cost effective mechanism for controlling stormwater pollutants, especially in general permits where it is difficult to factor in site-specific considerations. Boatyards are not shipyards even though they may have some similar operational and wastewater characteristics.

Question 2.2 What was the process for determining AKART for this general permit?

RESPONSE 35: This permit continues the AKART determination made in the previous permits that BMPs are the most cost effective method for controlling stormwater pollutants. This permit also imposed vacuum sanding because it was demonstrated to be cost effective.

Comment 3 Furthermore, the permit's provisions for SWPPPs (and monitoring plans) essentially constitute an impermissible self-regulatory scheme. Under this permit, after obtaining permit coverage, a boatyard would develop its own SWPPP – essentially defining AKART for the boatyard – without any Ecology or public review. This is unacceptable and illegal. See *Waterkeeper Alliance v. EPA*, 399 F.3d 486, 500 (2nd Cir. 2005); *Environmental Defense Center v. EPA*, 344 F.3d 832, 855 (9th Cir. 2003) (“...stormwater management programs that are designed by regulated parties must, in

every instance, be subject to meaningful review by an appropriate regulating entity to ensure that each such program reduces the discharge of pollutants” to meet applicable standards).

Ecology should consider reproducing applicable sections of the Stormwater Management Manual for Western Washington in the permit to prescribe BMPs that must be included in SWPPPs and implemented, unless the permittee demonstrates that an alternative BMP has equivalent performance in a process open to public comment and opportunity for appeal.

Question 3.1 How does the permit satisfy the Clean Water Act’s prohibition on the incorporation of a self-regulatory scheme?

RESPONSE 36: This permit prescribes mandatory BMPs. Other BMPs are developed by the Permittee as necessary to meet the effluent limitations or benchmarks. All of these facilities have been visited by an Ecology inspector who has reviewed and redirected the monitoring point if necessary. New facilities will be required to identify and justify monitoring locations.

Question 3.2 Why does Ecology not include more prescriptive requirements for SWPPPs?

RESPONSE 37: Ecology believes the permit requirements for the SWPPP are already prescriptive.

Comment 4 The proposed draft permit is very poorly organized and confusing. Monitoring requirements are not in one place and are poorly defined. There are BMP requirements described in two sections that do not fit together well. Many of the permit’s conditions are repetitive or disjointed. This permit may be very difficult for permittees to understand and implement.

RESPONSE 38: This comment is too general to cause a reorganization of the permit. The discharge limitations including benchmarks are given in S2. *Discharge Limitations*. The mandatory BMPs specific to boatyards are given in S2.7. *Mandatory Best Management Practices*. The monitoring requirements are given in S3. *Monitoring Requirements*. The mandatory BMP’s of Section S5 are procedural BMPs that are not specific to boatyards but must be included in the SWPPP.

SECTION BY SECTION COMMENTS

Definitions

Comment 5 We do not see the term “Approved Stormwater Management Manuals” in the text of the permit. To the extent that the permit actually uses or may use this term, the definition is unacceptable because it does not identify what specific manuals it includes. A permit should not reference unidentified guidance documents.

Question 5.1 Where is the term “Approved Stormwater Management Manuals” used in the body of the permit?

RESPONSE 39: The term is used in section S5A3.

Question 5.2 How is it legal or fair to incorporate by reference into the permit unspecified guidance documents that may not yet even exist?

RESPONSE 40: Ecology is not mandating the use of specific BMP's from approved manuals.

Question 5.3 How is it legal or fair to incorporate by reference into the permit unspecified guidance documents that may not yet even exist without provision for public review consistent with permit modification procedures?

RESPONSE 41: Ecology is not mandating the use of specific BMP's from approved manuals. The Permittee is free to choose a BMP from any source, however, the Permittee must supply the technical basis of the BMPs which don't come from approved manuals. Modification of permit coverage when treatment BMPs are used is subject to public review as clearly specified in the permit.

Comment 5A The definition of “Benchmarks” should indicate even when a discharge is below a benchmark value, it may be possible to determine on the basis of site-specific information that the discharge causes or contributes to a violation of water quality standards.

Question 5A.1 Is it possible for a discharge below a benchmark value to cause or contribute to a violation of water quality standard?

RESPONSE 42: Ecology has used conservative factors to formulate benchmark values so the probability of violation of water quality standards is

small for Permittees meeting limits or benchmarks.

Question 5A.2 How would Ecology, a permittee, or anyone else determine whether a discharge below a benchmark value causes or contributes to a violation of water quality standards?

RESPONSE 43: This would require that at any instant of time that a stormwater discharge was occurring there would be a measurement of volume of discharge, configuration of the discharge, concentration of pollutant in the discharge, effluent hardness, receiving water hardness or salinity, receiving water background concentration, the concentration of particulates and organics in the receiving water, receiving water turbulence, and receiving water flow.

Question 5A.3 What monitoring of site-specific conditions does the permit require to determine whether a discharge causes or contributes to a violation of water quality standards whether it is above or below a benchmark value?

RESPONSE 44: The permit requires monitoring of effluent concentration of copper as total recoverable. The permit does not require monitoring of other site specific conditions to determine whether a discharge causes or contributes to a violation of water quality standards. Rather, Ecology is relying on a combination of narrative and numeric effluent limits that Ecology believes will be protective of water quality.

Comment 6 The phrase “or any 24-hour period that reasonably represents the calendar day for the purposes of sampling” should be deleted from the definition of “Daily Discharge” because is it nonsensical.

Question 6.1 What is the meaning of the phrase “24-hour period that reasonably represents a calendar day for the purposes of sampling”?

RESPONSE 45: This is the federal definition of daily discharge (40 CFR 122.2). It means that Ecology may allow composite sampling from 0800 day 1 to 0800 day 2 to represent a calendar day (daily discharge).

Comment 7 A reproduction of the relevant portions of the report cited by the “Enhanced filtration” definition should be provided in the Fact Sheet.

RESPONSE 46: The term describing treatment has been changed as a result of comment. See response to comment 30.

Comment 8 The statutory citation in the definition of “FWPCA” is wrong. It should be 33 U.S.C. § 1251 et seq.

RESPONSE 47: The incorrect citation in the definition has been corrected.

Question 9.1 With respect to the definition of “NTU,” is a nephelometer a “method” or a device?

RESPONSE 48: See 49 below.

Question 9.2 Is the sentence about the nephelometer necessary?

RESPONSE 49: No. The definition of NTU has been removed.

Comment 10 The definition of “POTW” provided at 40 C.F.R. § 122.2 should be used instead of the one given.

RESPONSE 50: The definition of “POTW” is from 40 CFR 403.3.

Comment 11 The definition of “Pressure washing” should include any methods of scrubbing and rinsing, not only use of a pressure washer and “hand scrubbing and rinsing with low pressure water from a hose.”

Question 11.1 Does Ecology intend to exclude other methods of scrubbing and rinsing from the definition of “pressure washing”?

RESPONSE 51: The word “mechanical” has been inserted in the definition.

Comment 12 The definition of “Site” is unclear. S1.A. defines “boatyard” as a business, not an activity.

Question 12.1 Does “site” include only areas where the “services typically provided” identified in S1.A. take place, or does it include other areas operated by the business that is the “boatyard”?

RESPONSE 52: The site is the area where the activities defined in S1.A. take place.

Comment 12A The definition of “stormwater” is too broad, as it includes things that are plainly not precipitation-related, i.e., road wash waters related to road cleaning or maintenance and infiltration. The definition from 40 C.F.R. § 122.26(b)(13) should be used instead (“storm water runoff, snow melt runoff, and surface runoff and drainage”).

Question 12A.1 What is the reason for using a definition of “stormwater” that is broader than that provided by the federal regulations?

RESPONSE 53: The definition has been changed to make it consistent with the referenced federal regulation.

Question 12A.2 How is it legal to regulate discharges of road wash waters and infiltration as stormwater?

RESPONSE 54: See Response 53.

Comment 13 The second sentence in the definition of “Turbidity,” purporting to identify the causes of turbidity, should be deleted.

RESPONSE 55: This sentence is included for informational purposes.

Question 13.1 If an optical property that causes light to be scattered and absorbed rather than transmitted in straight lines through a water sample is caused by something other than suspended matter, such as clay, silt, finely divided organic and inorganic matter, soluble colored organic compounds, and plankton and other microscopic organisms, is it “turbidity”?

RESPONSE 56: Yes

Condition S1

Comment 14 In the second paragraph of S1.A., the definition of “boatyard” as a “commercial business” may be inappropriate.

Question 14.1 Are all boatyards commercial businesses?

RESPONSE 57: Yes

Question 14.2 Are there no boatyards owned by public entities and/or operated as non-profits that would arguably be non-commercial?

RESPONSE 58: Boatyards operated by the State or non-profits are commercial operations for the purposes of waste discharge permits.

Question 14.3 Is coverage available under this permit for a boatyard that is not a commercial business?

RESPONSE 59: See 58 above

Comment 15 On a positive note, we are glad to see, in S1.C.3., that “[r]eceipt of the SWPPP by Ecology does not constitute review or approval of the SWPPP contents.”

RESPONSE 60: Comment noted.

Condition S2

Comment 16 Frequency of monitoring in S2.A.2. for process wastewater discharges to non-delegated sewer systems is manifestly inadequate given that sewage treatment plants do not effectively remove metals and the incredibly high levels of copper, lead, and zinc frequently observed in boatyard pressure wash wastewater. Monitoring should be no less frequent than weekly.

Question 16.1 In light of the incredibly high levels of copper, lead, and zinc frequently observed in boatyard pressure wash wastewater and given that sewage treatment plants do not effectively remove metals, how does the S2.A.2. monitoring frequency suffice to reliably detect violations of the effluent limitations?

RESPONSE 61: As noted in the fact sheet this permit increases the monitoring from 2 per year to 4 per year for discharges of pressure wash wastewater to POTWs. The fact sheet also notes that this monitoring frequency is the same as required of discharges to delegated treatment plants. The frequency of monitoring imposed in a permit is dependent on many factors including volume of discharge, concentration of pollutants, and the variability of concentration. Ecology has approved this frequency of monitoring in the audits of delegated pretreatment programs.

Question 16.2 In light of the incredibly high levels of copper, lead, and zinc frequently observed in boatyard pressure wash wastewater and given that sewage treatment plants do not effectively remove metals, how does the S2.A.2. monitoring frequency suffice to satisfy the requirements of 33 U.S.C. § 1318(a)?

RESPONSE 62: This section of the Clean Water Act says “the Administrator shall require the owner or operator of any point source to... (iv) sample such effluents (in accordance with such methods, at such locations, at such intervals, and in such manner as the Administrator shall prescribe),...”. The USEPA has not defined the frequency of monitoring in regulation. Therefore, monitoring frequency is set on a case-by-case basis. Ecology believes that for this low volume, infrequent discharge, 4 samples a year is sufficient.

Question 16.3 Is there a precedent in Ecology’s NPDES permitting for sampling of process wastewater discharges subject to numeric effluent limitations at this frequency (i.e., four times a year and not in every quarter)? What is that precedent?

RESPONSE 63: See Response 61.

Comment 16A The terms “Pass Through,” “Upset,” and “Interference,” used in S2A.3. should be defined, at least by reference to the definitions found in the federal regulations.

Question 16A.1 What does the term “Pass Through”, as used in S2.A.3, mean?

RESPONSE 64: See response 66

Question 16A.2 What does the term “Upset”, as used in S2.A.3, mean?

RESPONSE 65: See response 66

Question 16A.3 What does the term “Interference”, as used in S2.A.3, mean?

RESPONSE 66: These terms have been defined in the permit and referenced to the federal regulations.

Comment 17 The last sentence of S2.B. should be changed to require “all permittees” instead of “all such discharges” to comply with applicable sewer use ordinances.

RESPONSE 67: The sentence has been changed as recommended.

Question 17.1 Do “applicable sewer use ordinances” typically regulate actual discharges, or do they regulate dischargers (businesses and other entities that discharge)?

RESPONSE 68: Delegated (Pretreatment) municipalities issue discharge authorizations to individual dischargers. Non-delegated municipalities regulate dischargers to their system through ordinance but in this case Ecology issues individual discharge authorizations to significant dischargers.

Comment 18 S2.C.2. must include numeric effluent limitations for lead and zinc for discharges to the waters impaired for these pollutants. Effluent limitations for copper, lead, and zinc discharged to waters impaired for these pollutants should be zero, as any additional loading contributes to violations of water quality standards.

Question 18.1 How does the permit satisfy the requirements of 40 C.F.R. § 122.4(i)?

RESPONSE 69: The permit (S2.C.2.) requires that new sources or new discharges of pollutants to waters on the 303(d) list for copper and zinc must meet the water quality criteria in their effluent.

Question 18.2 Does the permit authorize discharges of pollutants of concern to impaired (303(d)-listed) waterbodies that are likely to contribute to violations of water quality criteria? If not, how does it prohibit such discharges?

RESPONSE 70: See response 69.

Comment 19 As discussed in the general comments, this permit should include numeric effluent limitations for stormwater discharges. Significant evidence indicates the reasonable potential for boatyard stormwater discharges to cause or contribute to violations of water quality standards for at least copper, lead and zinc and numeric water quality based effluent limitations should be set for all of these.

Question 19.1 How were reasonable potential analyses conducted by Ecology for boatyard discharges of the following: a) copper; b) lead; and c) zinc?

RESPONSE 71: Ecology did not conduct a reasonable potential analysis for each facility that may be covered under the general permit. The general permit uses benchmark values which are narrative effluent limits. Ecology considers values at or below benchmark as unlikely to cause a water quality violation. The benchmarks for this permit were derived using conservative values of factors that are available to individual Permittees.

Question 19.2 What were the results of these reasonable potential analyses?

RESPONSE 72: See response 71.

Question 19.3 If any of these reasonable potential analyses indicated that there is a reasonable potential for discharges to cause or contribute to violations of water quality standards, what are Ecology's practical and legal justifications for not imposing numeric effluent limitations for these pollutant parameters?

RESPONSE 73: See response 71.

Comment 20 If a benchmark/response scheme is to be used, the benchmarks for copper in S2.C.3., 4., and 5. are incredibly and unacceptably high. We question the justification

of these provided in the fact sheet at pp. 17-19. The assumptions and the methods are not adequately explained. We question whether the cited WER studies are appropriately used and note that the calculations seem to incorporate dilution factors and, thus, mixing zones, even though there is no explanation of how mixing zone criteria are satisfied and no adherence to mixing zone regulation procedural safeguards. The way this permit is written, once boatyard gets below these incredibly high benchmarks, no further work to reduce copper levels may be needed even though discharges may remain in the level where they cause or contribute to violations of water quality standards.

Question 20.1 Why do the calculations incorporate dilution factors?

RESPONSE 74: The permit includes a conservative dilution factor for some dischargers in recognition of the fact that most discharges to surface waters receive some dilution.

Question 20.2 How likely is it that discharges below the benchmarks, particularly the benchmarks for copper, would cause or contribute to violations of water quality standards?

RESPONSE 75: It is not likely that discharges below the benchmark values will cause or contribute to violations of water quality standards.

Question 20.3 What mechanism or provision in the permit effectively prohibits a discharge that causes or contributes to a violation of water quality standards but that is below the benchmarks?

RESPONSE 76: The permit includes a narrative prohibition of violation of water quality standards and a provision that allows Ecology to place the facility under individual permit with evidence of a violation of water quality standards.

Comment 21. If a benchmark/response scheme is to be used, the omission of benchmarks (and monitoring requirements) for lead and zinc is unacceptable, especially given the magnitude of the contamination with these pollutants observed in boatyard stormwater and their toxicity to the environment.

Question 21.1 Why are there no benchmarks or effluent limitations for lead or zinc?

RESPONSE 77: Ecology believes that copper, lead and zinc in pressure wash wastewater and stormwater originate primarily from the bottom paint on boats. Copper is the pollutant with the highest concentration and the lowest criteria of the three. As explained in the fact sheet, copper is used as an indicator for effective best management practices for lead and zinc. See response 12.

Question 21.2 Why are there no monitoring requirements for lead or zinc?

RESPONSE 78: See response 77 and 12.

Comment 22 The first sentence of S2.C.6. is unclear (perhaps “discharging” should be omitted), as are the circumstances to which this provision is to be applied.

RESPONSE 79: The sentence has been reworded. This condition applies to facilities discharging to an infiltration basin which is a minimum of 200 feet from the waters edge.

Question 22.1 and Comment 22.1 Do the discharges to ground using enhanced filtration here addressed reach surface water? If so, we question the adequacy of the 1000 ug/L copper limit. In any event, no basis for the 1000 ug/L copper limit is provided.

RESPONSE 80: Ecology assumes most ground discharges at boatyard facilities eventually reach surface waters.

Question 22.2 What is the basis for the 1000 ug/L copper limit?

RESPONSE 81: The basis is given on page 20 of the fact sheet.

Comment 23. S2.C.7. should be folded into S5. It is confusing to have BMPs discussed in two permit conditions and in such a disjointed manner. Again, we suggest that Ecology consider reproducing the relevant BMP sections from the Stormwater Management Manual for Western Washington directly in the permit and, if deemed necessary, providing a mechanism for a permittee to divert from their otherwise mandatory usage and inclusion in the SWPPP.

RESPONSE 82: Permit condition S2.C.7 lists the mandatory BMPs specific for boatyards. Condition S5 addresses the process of incorporating BMPs into the Stormwater Pollution Prevention Plan (SWPPP) and general procedural BMPs. The most appropriate BMPs are already given in the permit as mandatory BMPs. The fact sheet (page 16) directs Permittees to volumes IV and V of the Western Washington Stormwater Manual as necessary.

Comment 24 The first paragraph of S2.C.7. is poorly worded. If not folded into S5, it could be rewritten as follows:

Permittees shall implement the following BMPs.

Permittees shall prepare a handout describing these BMPs and provide copies to all employees, contractors, boat owners, and other customers. These BMPs shall be posted conspicuously within the work areas and incorporated into the permittee's SWPPP.

RESPONSE 83: The suggested wording appears to be essentially the same as the existing permit wording.

Comment 25 S2.C.7.a. should require immediate use of vacuum sanders. The boatyard industry has known or should have known of Ecology's intent to require use of this inexpensive, readily available technology for some time already. It should not take any of the boatyards that have not already obtained vacuum sanders more than a couple of weeks to obtain them. Adequate notice of an immediate requirement would be provided during the public comment period on the draft of this permit. It is outrageous that Ecology would even consider letting another summer go by without requiring the use of vacuum sanders. This provision is also unclear. It should be rewritten as follows:

Vacuum sanders are the only allowable means of mechanical paint removal. Paint removal by non-vacuum sander, grinder, or any other mechanical means is prohibited.

Question 25.1 Why doesn't the permit require immediate use of vacuum sanders?

RESPONSE 84: Ecology agrees. The permit has been changed to require the immediate use of vacuum sanders. Also see response No. 146.

Comment 26 S2.C.7.b. uses the term "emergency repair," which is undefined. The permit should provide an adequate definition.

Question 26.1 What does "emergency repair" mean?

RESPONSE 85: An emergency repair is a repair which is unexpected, serious, and must be made promptly to prevent loss of property or life.

Comment 27 S2.C.7.c., d., e., and f. all use the phrase "to prevent their release into the environment and entry into waters of the state." The word "or" should be substituted for "and" in each of these.

RESPONSE 86: This permit only regulates discharges to water.

Comment 28 S2.C.7.d, and e. both require cleanup or collection of waste "routinely" or

“on a routine basis.” This is vague and “routine” imposes no requirement as to actual frequency. These provisions should require cleanup or collection on a daily or twice-weekly or other specified “routine” basis.

Question 28.1 How frequent is “routinely” or “on a routine basis”?

RESPONSE 87: Condition S2.C.7.e. specifies daily and weekly. Condition S2.C.7.d specifies cleanup of all collected materials routinely. This unspecified frequency means a frequency that it is sufficient to prevent release of the materials into the environment and entry into waters of the state.

Comment 30 In S2.D., sample collection and analysis for conditionally-approved non-stormwater discharges should be required to determine whether such discharges cause or contribute to violations of water quality standards.

Question 30.1 What information does Ecology have that indicates that the identified conditionally-approved non-stormwater discharges have no reasonable potential to cause or contribute to violations of water quality standards?

RESPONSE 88: EPA determined these discharges had no reasonable potential to cause or contribute in their multi-sector general permit. They did, however, require these discharges to be identified in the SWPPP. This permit has been changed to also require these discharges, except for fire fighting water, to be identified in the SWPPP. This permit has also been modified to require these discharges to be monitored.

Question 30.2 What are the factual and legal bases for Ecology’s authorization of non-stormwater discharges?

RESPONSE 89: See Response 88.

Question 30.3 What are the factual and legal bases for Ecology’s authorization of non-stormwater discharges without any monitoring requirements?

RESPONSE 90: See response 88.

Question 31.1 Are there any irrigation drainage discharges at boatyards that make inclusion of S2.D.e. necessary?

RESPONSE 91: No. This discharge has been removed.

Condition S3.

Comment 32 The stormwater monitoring required by the table in S3.B. is inadequate on several counts. Lax monitoring requirements in previous permits provide no justification for lax monitoring requirements in this permit. First, the definition of the sample point as “consistent location” is not sufficient. All discharge points should be sampled on every sampling occasion unless the permittee can justify excluding some points with well-supported documentation subject to Ecology review and opportunity for public comment and appeal, perhaps in a permit modification or in a monitoring plan submitted with a permit application.

Question 32.1 What are the factual and legal bases for not requiring monitoring (sampling and analysis) of all discharge points?

RESPONSE 92: Ecology believes that one sample point can be representative of the stormwater discharges from a boatyard. The site plan submitted with the revised application will help us make that determination.

Question 32.2 How many discharge points to boatyards typically have and what, typically, are they?

RESPONSE 93: Most boatyards have sheet flow or rivulets across the yard which flows down slope into the railway. Some also have a storm drain that is piped directly to the bank.

Question 32.3 What is Ecology’s plan to ensure that the “consistent location” for sampling chosen by a permittee will provide a sample representative of the nature and quality of a permittee’s discharges?

RESPONSE 94: The revised application has the following portion to be completed by the applicant:

“If your stormwater discharges at more than one location, describe which discharge location(s) you will be sampling (reference to the site plan required in Section E below) and why you believe the discharge location(s) are representative of the stormwater from your facility.”

Ecology will be able to require more than one sampling point if we don’t agree that the chosen location represents other locations.

Comment 33 Second, given that, as the proposed draft Fact Sheet states, “[o]ther pollutants which are expected in significant quantities [in boatyard stormwater discharges] are zinc, lead, and total petroleum hydrocarbons (TPH),” the permit should

require sampling for these in addition to the parameters here proposed.

Question 33.1 What are the factual and legal bases for excluding these pollutants “expected in significant quantities” from sampling requirements?

RESPONSE 95: See response 77 for zinc and lead. TPH will be measured as oil/grease with the analytical method specified in the permit for measuring oil/grease.

Question 33.2 Without sampling, how does the permit effectively ensure that water quality standards relevant to these pollutants “expected in significant quantities” will not be violated by authorized discharges?

RESPONSE 96: See responses 77 and 95.

Comment 34 Third, given the significance and magnitude of the pollution observed in boatyard stormwater discharges, sampling a mere five times a year is far too infrequent to provide a sufficient indication of whether and what discharge problems exist or to provide a basis for forcing improvement or taking an enforcement action against problem dischargers. This is especially so as the proposed benchmark/response scheme for stormwater relies on sampling for indications of needed improvement and because there is sometime no rainfall, or, at least, no circumstances in which a first flush sample can be collected during September and other months as well. Sampling should be required at least twice a month, year round, although we think weekly sampling is reasonable and warranted, especially since samples need only be taken when it rains. Perhaps a sample frequency reduction trigger, providing for Ecology review and approval, could be incorporated to lessen the sampling burden when a permittee’s sample results consistently indicate good performance and sufficiently clean stormwater discharges.

Question 34.1 What are the factual and legal bases for the given sample frequency?

RESPONSE 97: Ecology believes five samples a year are adequate to measure pollutant control measures. This is frequent enough without being burdensome or extremely costly. The legal basis for this decision is best professional judgment (BPJ). These are intermittent discharges.

Question 34.2 How are the required sample frequencies adequate to ensure that discharges do not cause or contribute to violations of water quality standards?

RESPONSE 98: See response 97.

Question 34.3 How are the required sample frequencies adequate to make the benchmark

/response scheme effective to ensure that discharges do not cause or contribute to violations of water quality standards?

RESPONSE 99: See response 97.

Question 34.4 How are the required sample frequencies adequate to make the benchmark /response scheme effective to ensure that discharges are provided with AKART?

RESPONSE 100: See response 97.

Comment 35 Fourth, the sampling here is inadequate to determine compliance with the S2.C.8. narrative water quality based effluent limitation, rendering that effluent limitation useless in many circumstances. Again, Ecology must either include water quality based numeric effluent limitations or a monitoring scheme sufficient to reliably detect discharges that cause or contribute to violations of water quality standards. The Pollution Control Hearings Board has described what it sees as necessary for monitoring to accomplish this with respect to metals criteria. See *Airport Communities Coalition v. Ecology*, PCHB No. 01-160, Findings of Fact, Conclusions of Law, and Order (8/12/02) at sec. IV.B.1.c. (“Any analysis of whether there is an exceedance of the zinc and copper standards in WAC 173-201A-040 requires: (1) hardness data measured in the receiving water, (2) sampling over a set period of time, (3) the sampling to be conducted in receiving waters (waters of the state), not upstream of those receiving waters, and (4) measurement of the dissolved fraction of metals.”)

Question 35.1 How is the sampling adequate to determine compliance with the narrative water quality based effluent limitation?

RESPONSE 101: Ecology is using benchmarks and frequency of exceedance of those benchmarks as an indicator of compliance with water quality standards. Five samples a year are sufficient to determine if the BMPs at a boatyard are effectively controlling pollutants.

Comment 36 Finally, the visual monitoring requirement is unacceptably vague. In addition to weekly, visual monitoring of the discharge should be required whenever a sheen is visible on the site.

Question 36.1 What does it mean that the sample type is “visual”?

RESPONSE 102: This means capable of being seen.

Question 36.2 What exactly is to be visually monitored and what is to be looked for?

RESPONSE 103: The stormwater runoff is to be visually monitored for pollutants such as oil sheen, turbidity, debris, etc. in the stormwater. The yard practices are to be visually monitored for adherence to best management practices.

Comment 37 This permit should require sediment evaluation and monitoring by all permittees that do not discharge to a POTW. The proposed draft Fact Sheet, at p. 20, only cites information that Ecology has now long had that indicates that sediment at two boatyards was “well below current sediment quality criteria for copper, lead, and zinc.”

Question 37.1 What are the legal and practical justifications for not requiring sediment monitoring of permittees?

RESPONSE 104: The studies cited in this fact sheet (see response 14) have shown no violation of sediment criteria.

Question 37.2 Does not the data that Ecology has collected on boatyard wastewater and stormwater discharge metals contamination show that every boatyard has potential for sediment contamination and, thus, should be required to perform sediment monitoring?

RESPONSE 105: For this general permit, we have based our judgment on the two studies cited above which observed no violations of the sediment management standards.

Question 37.3 What is Ecology’s plan with respect to collecting sediment samples at several boatyards in 2005 – 2006? Has any such sampling been performed to date? What is Ecology’s budget for such sampling?

RESPONSE 106: Our plan is to sample stormwater and receiving water from 3 facilities on three occasions during the winter of 2005-2006. We will also sample sediment at the three facilities. The study plan and QAP are in development. Our budget is approximately 0.2 FTE plus laboratory costs.

Condition S4.

Comment 38 For the reasons given in the introduction and general comments, we believe that the “response to monitoring values which exceed benchmarks” approach is faulty and illegal and should be removed from the permit in favor of numeric effluent limitations.

If this approach is to be used, we have the following questions and comments about

this section. The comments on stormwater monitoring and the establishment of benchmarks for additional parameters given above are also relevant to this section.

Question 38.1 How is Ecology going to track data about where permittees are in this scheme and what reports are due when and whether they have been submitted?

RESPONSE 107: The data will be tracked in our permit data system called WPLCS. This data system is currently being programmed for the use of benchmarks. Beginning January, 2006 Ecology inspectors and enforcement personnel will be able to obtain non-compliance reports. These reports will list facilities which have not submitted DMR's for a sample period, Permittees who have exceeded limits, Permittees who have exceeded benchmarks and not submitted a Level 1 plan, and Permittees who have exceeded benchmarks multiple times and not submitted a Level 2 or a Level 3 report.

Question 38.2 In the Level One Response box, what is the standard by which a permittee should determine whether improvements or changes to the SWPPP "are necessary to control the benchmark parameter"?

RESPONSE 108: The standard is exceedance of a benchmark parameter and the cause of the exceedance.

Question 38.3 How is the Level One Response consistent with the requirement that Ecology select or approve additional BMPs in such a circumstance, as required by WAC 173-201A-160(3)(b)?

RESPONSE 109: The referenced regulation applies to violation of a water quality criterion. The Level One Response in the permit is required in response to exceedance of a benchmark.

Comment 39 We note that a Level Two Response requires nothing but submission of a report to Ecology. Instead, Level Two should simply require that at least one of the identified technologies be implemented on a reasonably expeditious schedule. Due to the inadequate stormwater monitoring frequency, even the worst performing facility will take most of a year to collect four sample results above benchmarks to trigger a Level Two Response. This framework invites monitoring gamesmanship to avoid triggering a Level Two or Three Response.

Question 39.1 How are failures by the permittee to collect required samples, or to properly collect samples, to be considered for purposes of benchmark exceedance counting?

RESPONSE 110: Failure to sample must be dealt with on an individual facility basis because facilities have different site characteristics. Failure to sample even after large area-wide storm events will cause Ecology to put the facility as a high priority for inspection/sampling and enforcement.

Comment 40 There is no opportunity for public review, comment, and appeal for Levels Two and Three as should be provided on decisions about major changes for permitted facilities.

RESPONSE 111: Ecology has not generally offered public comment or appeal on permit enforcement. The Level 2 response is a Level 1 response plus a report by the facility on options for treatment or covering the facility. The result of a Level 3 Response will be a modification of coverage. This modification of coverage requires public notice and will be subject to appeal.

Question 40.1 How do these provisions comply with the procedural requirements for permit modifications?

RESPONSE 112: These provisions are consistent with the procedural requirements for modification of permit coverage contained in WAC 173-226-230.

Condition S5.

Comment 41. As discussed in the introduction and general comments, the SWPPP, including the monitoring plan, should be submitted to Ecology for internal review, as well as public review, comment, and opportunity for appeal, before permit coverage is granted.

RESPONSE 113: Ecology doesn't believe this is necessary. This permit specifies limits, benchmarks and specific mandatory BMPs and mandatory operational BMPs. The SWPPP is an implementation plan to make sure the requirements of the permit are met. The SWPPP will be reviewed as to availability and content during Ecology inspections and is available to the public.

Comment 42 The first sentence of S5. should state "Each facility covered ... developed for each facility."

RESPONSE 114: It appears that the sentence as suggested would require each facility to be responsible for all other facilities instead of only their facility.

Comment 43 The provision for public access to SWPPPs in S5.A.1. is vague and susceptible to multiple interpretations. The second sentence of this paragraph should

state: “In addition, upon receipt of a request from a member of the public, the permittee shall either promptly provide a copy of the complete SWPPP to the appropriate regional office of Ecology and promptly so notify the requester, or promptly provide a copy of the complete SWPPP to the requester.”

RESPONSE 115: This provision has been changed in the permit. It now states:

1. Public Access and Signature:

The Permittee(s) shall retain the SWPPP and permit on site or within reasonable access to the site and make it immediately available upon request to Ecology or the local jurisdiction.

- a. A copy of the SWPPP shall be provided to Ecology within 14 days of receipt of a written request for the SWPPP from Ecology.
- b. A copy of the SWPPP or access to the SWPPP shall be provided to the public when requested in writing. Upon receiving a written request from the public for the Permittee’s SWPPP, the Permittee shall:
 - i. Provide a copy of the SWPPP to the requestor within 14 days of receipt of the written request; or
 - ii. Provide access to the SWPPP within 14 days of receipt of the written request at a mutually agreed upon location for viewing and/or copying of the SWPPP. The Permittee will provide reasonable access to copying services for which a reasonable fee may be charged; or
 - iii. Provide a copy of the SWPPP to Ecology and promptly notify the requestor that the SWPPP may be reviewed at Ecology within 14 days of receipt of the written request.

Comment 44. S5.A.2. includes timeframes that potentially conflict with those in S4. This provision must clarify that its timeframes are for “additional or enhanced” BMPs only, not for initial BMPs, which should already have been implemented.

Question 44.1 How are S4 and S5.A.2. supposed to work together?

RESPONSE 116: Condition S4. contains requirements for submittals, modification of the SWPPP and other actions as a result of exceedance of benchmarks. Condition S5.A.2 contains requirements for the SWPPP including mandatory BMPs from Section S2.C.7, any additional BMPs necessary based on sight inspection, Ecology directive or change at the facility. Any time a

benchmark is exceeded there is a mandatory reporting requirement on the discharge monitoring report (S4) and a requirement for modifying the SWPPP (S4 and S5.A.2).

Comment 45 S5.A.3. must identify the allowable stormwater technical manuals.

Question 45.1 What are the allowable stormwater technical manuals referenced in S5.A.3.?

RESPONSE 117: The allowable stormwater technical manuals are the “approved stormwater manuals” as defined in the permit

Comment 46. S5.B.2. allows permittees to determine which of multiple discharge points is to be monitored without any input from Ecology, any opportunity for public review, and without any meaningful standards. This is unacceptable. Monitoring of all points of discharge should be required unless the permittee can demonstrate that such is not necessary in some manner of public process.

Question 46.1 How does S5.B.2. not amount a an impermissible self-regulatory scheme given that it allows permittees to determine which of multiple discharge points is to be monitored without any input from Ecology, any opportunity for public review, and without any meaningful standards?

RESPONSE 118: Ecology determines whether one sample point is representative. The Permittee, at time of application, recommends and justifies a single sample point if there are multiple discharge points but Ecology must concur with the recommendation or require multiple monitoring points.

Question 46.2 What must be included in the S5.B.2.b. “check list for visual monitoring,” and why does the permit not enumerate these items?

RESPONSE 119: This list is facility specific. If the permit enumerated them, the list would be deficient for some facilities. The check list at a minimum should contain all of the mandatory BMPs and those additional BMPs instituted to meet benchmarks (Permit section S5.A.2).

Comment 47 Stormwater inspections and recordkeeping (S5.B.3.a.vi.) fail to satisfy federal regulatory requirements. 40 C.F.R § 122.44(i)(4) mandates that this permit include inspections to evaluate BMPs and permit compliance no less than annually, inspection recordings to certify permit compliance (or non-compliance), and signatory requirements for inspection reports.

Question 47.1 How does S5.B.3.a.vi. satisfy the requirements of 40 C.F.R. § 122.44(i)(4)?

RESPONSE 120: The applicable requirements of 40 C.F.R. § 122.44(i)(4) are: (i) Conduct an annual inspection, (ii) maintain inspection records for three years, and (iii) sign reports according to 40 CFR 122.2. All of these requirements are in the draft permit.

Condition S7.

Comment 48/Question 48.1 Are bypass provisions limited to stormwater control facilities? S7.A. seems to indicate that this may be so, as it should be, but is not entirely clear.

RESPONSE 121: The bypass provision is applicable to any wastewater treatment facility. The first sentence of S7.A. prohibits bypass for any stormwater treatment facility during storm events that are below the approved design criteria.

Comment 49. S7.A.3. should clearly indicate that the described bypass is permitted only if all three of the criteria (a, b, and c) are satisfied. S7.A.3.c. should state “Ecology is properly notified of the bypass in the manner indicated by Special Condition S6.E. of this permit” because S6.E. does not itself require notification of bypass.

Question 49.1 How does S6.E. require notification of bypass?

RESPONSE 122: Sections S7.A.3. a and b are separate conditions. A facility may meet the criteria of part a. with the pressure wash water treatment or in the storm water treatment. Section b. is obviously specific to stormwater. The word “and” has been removed from section b. to make it clearer that it applies to both section a. and b. This bypass provision (S7.A.3.) is specific to bypass that causes noncompliance with the permit. Section S6.E. requires notification for any noncompliance of the permit.

Condition S8.

Comment 50 This should state “... into the environment or entry into waters”

RESPONSE 123: This permit only regulates discharges to water.

Fact Sheet

Comment 51 The Fact Sheet should identify each of the existing permittees and their receiving waters.

Comment 51 Who are the existing permittees, and what are their receiving waters?

RESPONSE 124: A list of the current permitted facilities is included at the end of this appendix.

Comment 52 Below the table on p. 6, is a reference to exceeding surface water quality standards by a factor of about 1,000.

Question 52.1 Is this a reference to fresh water or marine water standards?

RESPONSE 125: The statement should say exceed surface water quality ambient standards by a factor of about 10,000. The criteria for fresh water and marine waters are similar (4.8 and 4.61µg/L) so the statement is applicable to both.

Question 53.1 On p. 10 is a statement about the lack of data on file with a full characterization of pollutants in the stormwater from the boatyard industry. Why can data from the shipyard industry not suffice?

RESPONSE 126: The 1995 Toxic Release Inventory data (EPA 1997) for shipyards lists 12 organic compound commonly released to water. The largest releases to water from shipyards were reported (in relative order) : zinc dust and compounds, xylene, copper compounds, N-butyl alcohol, nickel compounds, methanol, lead compounds, manganese compounds, methyl tert-butyl ether, and acrylonitrile. It's not clear if boatyards, which are much smaller and service fewer steel hulls, would demonstrate the same releases and in the same relative magnitude. Ecology's sampling in the winter of 05-06 will analyze for the chemicals given above.

Comment 54 On p. 16 is a discussion of the mandatory use of vacuum sanders. This should be expanded to clarify what is a vacuum sander. For example, a standard random orbital sander hooked up to a shop vacuum is not a vacuum sander.

Question 54.1 What is a vacuum sander?

RESPONSE 127: A vacuum sander was defined on page 46 of the fact sheet.

The definition has been placed in the permit.

Question 54.2 Is a standard random orbital sander hooked up to a shop vacuum a vacuum sander?

RESPONSE 128: Ecology can not answer this without a definition of “standard random orbital sander”. These sanders vary in size, type of drive, power, collection holes and collection efficiency. The definition of vacuum sander, based on the specifications of the sander used in comparison with a non-vacuum grinder, has been placed in the permit.

COMMENTS ON FACT SHEET

Comment 55 - Table 2. (Page 7)

The data presented in this table represents sampling data from 1998-2002, but fails to include data available from 2003 and 2004 and 2005.

Questions 55.1 Why was almost half of the monitoring data excluded? Why have permit holders collect data if it is not going to be used?

RESPONSE 129: Work on this permit was begun in 2002. At that time we did a quality review of the data that had been submitted to us from the self-monitoring. This included reviewing the discharge monitoring reports (DMR's) that were submitted and in some cases we contacted the laboratory to verify the analysis. This quality review was costly and once the permit work was begun we couldn't afford the time for quality assurance on the data that was continuing to be submitted. The data that was quality reviewed was felt to best represent the stormwater quality from the boatyards. The stormwater data to be collected in this permit will be used to evaluate effectiveness of BMPs through benchmarks or to evaluate compliance with effluent limits. The programming currently ongoing with our WPLCS data base will incorporate some screening criteria for poor data. In addition, Ecology now has a person to evaluate data received from general permit monitoring

Comment 56 - Table 3. (Page 7)

The minimum and maximum values used for calculating the mean in Table 2 were 2 and 110,000 µg/L, which corresponds to the 791 data points listed in a table titled “Verified (lab) boatyard copper data without non-detects, ranked by worst, and with the calculation of the 95th Percentile and the reduction/dilution needed to meet WQS.” This table was

distributed at a Boatyard Stakeholders Advisory Committee Meetings in 2003.

The minimum and maximum data values listed in Table 3 in the log normally transformed data are .69 and 11.6 µg/L respectively. This means that the highest 13 discharges ranging from 12,200 to 110,000 µg/L were eliminated from the data base and the lowest 507 data points, ranging from 698 to 2 µg/l were eliminated from the calculation. The result is that 520 data points or 66% of the data has been thrown out. It also means that the mean copper discharge of 334 µg/L, that was derived in this calculation, is skewed.

Question 56.1 Why has Ecology thrown out 66% of the data points used to calculate the mean discharge of copper from boatyards?

RESPONSE 130: The calculations in the fact sheet were done on the same data set as referenced above using functions in MS Excel and no values were eliminated. The number 2 when log normally transformed equals 0.69. The number 110,000 when log normally transformed equals 11.6.

Comment 57 - Page 18. Calculation of the Saltwater Benchmark for Copper

In order to calculate the benchmark for copper in saltwater, the draft permit applies a dissolved percentage of 30% to the acute criteria of 4.8 µg/L.

According to WAC 173-210A-240 Table 240(3) "Toxics Substances Criteria" Note dd, "[t]hese ambient criteria in the table are for the dissolved fraction." In other words, the 4.8 µg/L acute criteria for copper in marine water shown in Table 240(3) refers to the dissolved fraction. Since effluent limits and benchmark limits are stated in total recoverable copper, the acute copper criteria from Table 240(3) must be converted to a total recoverable value. Table 240(3)'s Note dd, explains that "[t]he metals criteria may not be used to calculate total recoverable effluent limits unless the seasonal partitioning of the dissolved to total metals in the ambient water are known." This appears to be the case here, because the Fact Sheet does not indicate that there is any seasonal partitioning data available. Note dd also requires that "[w]hen this information [i.e., seasonal partitioning data] is absent, these metals criteria shall be applied as total recoverable values, determined by back-calculation, using the conversion factors incorporated in the criterion equations." Table 240(3)'s Note ll identifies the marine conversion factor for copper as 0.83, and states that the "[c]onversion factors are already incorporated into the criteria in the table." A formula is then provided: dissolved criterion = criterion x CF [conversion factor]. To fill in the numbers, $4.8 = \text{criterion} \times 0.83$. Under Note dd, the total recoverable criteria determined by back-calculation is therefore 5.78 µg/L ($4.8/0.83 = 5.78$). This is the criterion for copper in marine water that Ecology should use to evaluate compliance with water quality standards.

Question 57.1 Why did Ecology use a conversion factor of 0.30, when seasonal partitioning data is not available, and the WAC specifies a conversion factor of 0.83 for copper in marine waters?

RESPONSE 131: Ecology did not convert the criteria. Ecology applied an estimated “translator” of 0.30. This is the predictor of the total recoverable metal that will become dissolved or remain dissolved in the receiving water. The rationale for using a translator of 0.30 is explained on page 18 of the fact sheet. When Ecology formulates effluent limits for metals in individual permits, the permit writers must obtain or estimate many factors (see Response No. 43). Without this data the process of formulating limits becomes a matter of estimating. Ecology is reluctant to apply a translator of 0.83 to the boatyard effluent to derive benchmarks. We believe the copper in the particulate form in the boatyard stormwater is in a stable matrix and not likely to rapidly dissociate as in other effluents. The resultant dissolved concentration of metal in the receiving water depends on a multitude of factors regarding the effluent and the receiving water (see Seligman, P.F. and A. Zirino (eds) 1998). The analysis of total recoverable to dissolved metal in the receiving water does not actually predict the solubilization of metal as an effluent goes to a receiving water but is used as an estimator to prevent having to conduct a minor research project on each effluent. Using the laboratory-derived conversion factor as a translator is very conservative as demonstrated by ratios collected statewide (Permit Writer’s Manual pg VI-6).

Question 57.2 Why did Ecology use a conversion factor of 0.30 for freshwater lakes and rivers and rivers with tidal fluctuations? Is the ratio of dissolved to total copper the same in each of these types of water? If so, where is the documentation?

RESPONSE 132: See response 131

Ecology also uses a water effects ratio (WER) of 1.43 to calculate the marine benchmark for saltwater, based on a study from San Diego Bay. As is noted in Peter Willing’s comments, Appendix 6-79 of the Permit Writer’s Manual clearly states, in a quote from the EPA, that “WERs are determined individually for each metal at each site; WERs cannot be extrapolated from one metal to another, one effluent to another, or one site water to another.”

The Permit Writer’s Manual in Appendix 6.1 also sets the conditions for determining a WER. The first condition is that a “permittee must have examined other options for reducing the concentration of metals in the effluent such as pollution prevention and treatment. This must be reported in the form of an engineering report as specified [?] in

Chapter 173-240 WAC. This report must precede or be submitted with the WER Study plan discussed below. If any technology-based option meets the cost test for reasonableness, that option must be implemented before Ecology will agree to a WER study.”

Treatment has not been considered as an option and a good argument can be made that pollution prevention activities to date have not been fully implemented at many boatyards.

Question 57.3 How can Ecology justify the use of a WER from San Diego when there is no site specific information or studies, and when pollution prevention and treatment options have not been fully evaluated?

RESPONSE 133: As noted in the fact sheet, Ecology used a conservative “wer” to estimate mitigation from receiving water effects in formulating benchmarks. See the following response number 139.

ADDITIONAL COMMENTS ON FACT SHEET

The attachment from Peter Willing, Water Resources Consulting, LLC contain additional comments on the Fact Sheet and are incorporated here by reference.

Please call if you have any questions.

Sincerely,

Sue Joerger
Puget Soundkeeper

June 23, 2005

Ms. Sue Joerger
Puget Soundkeeper Alliance
5309 Shilshole Ave NW, Suite 215
Seattle, Washington 98107

RE: Draft Boatyard General Permit

Dear Ms. Joerger,

This letter contains a review of the Department of Ecology's Draft Boatyard General Permit. I have reviewed the permit and the accompanying fact sheet.

My conclusion after reading the draft permit and the fact sheet that attempts to explain it, is that the whole effort should be aborted and a new attempt made. The existing work is sufficiently full of factual errors, inconsistency with agency guidance, organizational mistakes, etc. that it would be easier to start over. The most irreconcilable contradiction is the attempt to apply the Water Effect Ratio without its main indispensable feature, site specificity.

In reviewing the Draft Permit and Fact Sheet, I have read the following documents:

- Diamond, J. M., C. Gerardi, E. Leppo, T. Miorelli, 1997. Using a Water-effect Ratio Approach to establish effects of an effluent-influenced stream on copper toxicity to the fathead minnow. *Environmental Toxicology and Chemistry*, 16(7): 1480-1487.
- Rosen, G., I. Rivera-Duarte, L. Kear-Padilla, B. Chadwick, 2005. Effects of copper on marine invertebrate larvae in surface water from San Diego Bay, California. *Environmental Toxicology and Chemistry*, Vol. 24, No. 2, pp. 415-422
- Blake, A. C., D. B. Chadwick, A. Zirino, and I. Rivera-Duarte, 2004. Spatial and Temporal Variations in Copper Speciation in San Diego Bay. *Estuaries* Vol. 27, No. 3, p. 437-447
- Rivera-Duarte, I., Rosen, G., Lapota, D., Chadwick, D.B., L. Kear-Padilla, A. Zirino, 2005. Copper Toxicity to Larval Stages of Three Marine Invertebrates and Copper Complexation Capacity in San Diego Bay, California. *Environ. Sci. Technol.*, 39, 1542-1546
- Washington State Department of Ecology, Water Quality Program, Permit Writer's Manual Publication Number 92-109, Revised July 2004
- Kellems, Barry. Summary of Mixing Zone Analysis, March 31, 2003. Presentation to the Boatyard Advisory Committee. Hart Crowser, Seattle, Washington.
- Federal Register Vol. 65, No. 210 Monday, October 30, 2000

My specific comments chiefly apply to the Fact Sheet, which contains the supporting logic and documentation for the draft permit.

P. 6: "In preparation for renewing this permit the monitoring data for copper from 1998 to 2002 was compiled and reviewed for quality assurance. This data represents stormwater with some level of control (BMP's) in place." This statement leaves out more than it says. It does not say how the data were compiled, what the quality assurance

procedure was, which data points were selected, which were not, and why; exactly what was meant by "some level of control." The complete process with raw data should be open to public inspection. In its absence, it is impossible to conclude whether the 791 selected discharge values were in any way representative, and of what.

RESPONSE 134: See response number 129.

P. 7: "This data is not normally distributed as evident from the large difference between the mean and the median and the large kurtosis factor. The data when log normally transformed (Table 3 below) does become normally distributed and the mean derived from that transformation is 334µg/L (inverse ln 5.8122)."

A non-statistician should be able to look at the information the permit writer looked at and be able to reconstruct the same results using the same methods, even if he disagrees with them. This is not possible: the information presented is a black box. Appendix D, the statistical compilation, is hopelessly confused: the TSS statistics are mixed in with copper; it is impossible to follow the log transform procedure. None of the underlying data is included.

RESPONSE 135: The qualified data used to characterize the boatyard stormwater was distributed to the advisory group and was posted on the Ecology Boatyard Internet site.

"For comparison, the State water quality criteria, WAC 173-201A, for acute toxic effects due to copper in marine water is 4.8 µg/L (dissolved) and the fresh water acute criterion is 4.61 µg/L (dissolved) at a receiving water hardness of 25mg/l."

A comparison is impossible: the data in the previous two tables do not indicate whether they are total recoverable or dissolved.

RESPONSE 136: The data in Table 2 and Table 3 is reported as total recoverable. The boatyards are required to monitor copper as total recoverable and that's the only data we have. There is no way to convert effluent concentrations measured as total recoverable to dissolved concentrations and, as noted, the criteria are dissolved.

p. 7-8: "The average concentration was 32 mg/L (32,000 µg/L) in the fall and 65 mg/L (65,000 µg/L) in the spring. October, with an average concentration of 39 mg/L was higher than September with an average concentration of 19 mg/L. These differences were not statistically significant because of the high variance."

It makes no sense to go through a long explanation of seasonality in the data, then

observe that the differences are not statistically significant. If that's true, it is hard to see how any conclusion is warranted. The apparent message seems to be that there was too much noise in the data for the analyst to get any signal out of it.

RESPONSE 137: That conclusion is correct but on the other hand if there had been a large difference it would have been detected even with high variance.

p. 18: "For individual permits, a translator would be used that predicts the percent dissolved copper in the receiving water from the total recoverable effluent concentration. The translator is the ratio of dissolved/total recoverable observed in the receiving water."

The Fact Sheet does not identify any instance where a dissolved/total ratio has been observed in receiving waters that are under the scope of the proposed Permit. The proposition that one ratio can be used across the board is not realistic. It is widely recognized that the partitioning between different species of copper is a highly dynamic relationship, depending on numerous factors and changing very fast between discharge and equilibrium in receiving waters. Minton, Stormwater Treatment: Biological, Chemical, and Engineering Principles reviews the extensive authority for these processes.

"Because Ecology doesn't have data for all marine waters, an observed percent dissolved copper in the stormwater from shipyards stormwater was used to derive a benchmark. The data on the ratio of dissolved copper is not available for stormwater from boatyards but is available from shipyard stormwater and is assumed to be equivalent. This assumes the ratio of dissolved and bound copper remains constant upon entry into surface waters."

It is unrealistic to assume a fixed ratio for dissolved/total copper. Monitoring results do not show the same value for the same marine water at the beginning and end of the same rainstorm. The ratio of dissolved and bound copper by no means remains constant upon entry into surface waters. See Minton, G., 2002. Stormwater Treatment: Biological, Chemical, and Engineering Principles.

RESPONSE 138: We have no data on the dissolved to total recoverable copper in stormwater from boatyards. As noted in the fact sheet, we believe the shipyard stormwater data is the best indicator of this ratio. The Minton 2002 reference cited in the comment did not provide any information as to how we might better predict the dissolved concentration in the receiving water. Our EIM database only contains 144 records of copper measurements in marine waters in Washington. Of those records only 11 measured dissolved and total recoverable on the same sample. That data was from Commencement Bay and showed dissolved to total recoverable ratios of 0.2 to 0.98. See also response number 11 on general permits.

Marine water effect ratio (WER):

Ecology's own permit writer's manual says,

When a *site-specific aquatic life criterion* is derived for a metal, an adjustment procedure based on the toxicological determination of a water-effect ratio (WER) may be used to account for a difference between the toxicity of the metal in laboratory dilution water and its toxicity in the water *at the site* . . . WERs are determined individually for each metal at each site; *WERs cannot be extrapolated from one metal to another, one effluent to another, or one site water to another.*

(Emphasis added by Willing.)

Rosen (2004) also recognizes the site-specific character of a WER, and argues convincingly for multiple WER's in San Diego Bay. Thus Ecology's heavy reliance on the Navy's San Diego Bay work is inappropriate.

[Continuing on the subject of site-specificity, the Ecology permit writer's manual specifies the appropriate toxicity tests:

5.6. Which toxicity tests

For saltwater the potential species are: Primary – mysid (*Holmesimysis costata* EPA/600/R-95/136, August 1995 or *Mysidopsis bahia* EPA/600/4-91/003); Secondary - topsmelt (*Atherinopsaffinis* EPA/600/R-95/136) or silverside minnow (*Menidia beryllina* EPA/600/4-91/003). These species have both acute and chronic tests.

The Navy Work in San Diego Bay relied on three entirely different species, two gastropods and an echinoderm.

RESPONSE 139: Ecology used the term “wer” in this permit to account for receiving water effects that typically reduce toxicity of pollutants such as metals. This “wer” effect was used to calculate benchmarks. Although the hardness of receiving water has been incorporated into the numeric criteria values for metals for a long time, the USEPA has recently acknowledged other receiving water effects with the proposed adoption of the biotic ligand model (USEPA 2003).

(The fact sheet states) “A water effect ratio is the amount of reduction in toxic effect due to particulates and organic material in the receiving water. The reference cited above [Rosen et al.] is a review of several marine WER studies for copper. The range of nine values reported for marine wer's for dissolved copper was small. The values reported ranged from 1.43 to 2.77 for dissolved wer's. A value of 1.43 was used to calculate the benchmark.

The Rosen paper is in fact a report of one study in San Diego Bay. Rosen's exact

statement is, “for the bay as a whole, estimates for total recoverable and dissolved water-effect ratios (wer) ranged from 2.07 to 2.27 and 1.54 to 1.67, respectively.” It is not possible to associate these numbers with the source document identified.

RESPONSE 140: The quote cited in the comment was found in the abstract of Rosen, et. al. 2005 *Use of Laboratory Toxicity Tests With Bivalve and Echinoderm Embryos to Evaluate the Bioavailability of Copper in San Diego Bay, California, USA*. Environmental Toxicology and Chemistry: No. 24, pp. 415-422 and not the title the commenter referenced above (*Effects of copper on marine invertebrate larvae in surface water from San Diego Bay, CA*). In the body of the paper Rosen, et.al. 2005, there was a value of 1.43 presented. In the presentation to the Society of Environmental Toxicology and Chemistry in 2004 entitled *Effects of copper on marine invertebrate larvae in surface water from San Diego Bay, CA*, which was referenced in the permit fact sheet there was a compilation of data from other estuaries and a dissolved wer value of 1.43 reported from North San Diego Bay.

p. 18-19: “Freshwater water effect ratio (WER)

Diamant 2004. Chehalis River WER report.

Diamond, et al 1997. Environmental Toxicology and Chemistry, 16(7): 1480-1487.

Brungs et al. 1992. EPA 820R92100.

Freshwater wer’s for copper have reported values ranging from 1.1 to 15.3 (Brungs 1992). A value of 2.5 which is 50% of the mean of the seventeen values reported by Brungs et al. 1992, and Diamond, et al. 1997 was used to calculate the freshwater benchmark.”

Again the relevance of the Diamond study has to be questioned. That study relied on toxicity to fathead minnows in Wissahickon Creek, an effluent-dominated stream, in suburban Philadelphia.

RESPONSE 141: Comment noted, however, the Diamond study was in an effluent-influenced stream not an effluent-dominated stream.

Thank you for the opportunity to be of service to the Puget Soundkeeper Alliance in reviewing this draft permit.

Sincerely,

Peter Willing, Ph.D.

TESTIMONY AT PUBLIC HEARINGS 6/21 (LACEY) AND 6/22 (EVERETT)
(transcribed)

My name is Ron Oline, address, or actually, I'm the operator of Hylebos Marina, 1940 Marine View Drive, Tacoma, WA 98422. Like I stated, I operate Hylebos Marine, and we have a boatyard there in Tacoma, WA. On behalf of the owners and staff of the Hylebos Marina, we are very much opposed to the current draft NPDES Permit, specifically with regard to the two-part S2C, which sets effluent limitations and benchmarks which will be impossible to obtain without the installation of a very expensive stormwater filtration system. This requirement, we believe, will cause many, if not all boatyards, to simply close down, because of the simple fact that they will not be able to afford the huge capital equipment and construction, engineering, and permitting costs necessary to meet such a strict standard. If a boatyard does find the funding needed to make the changes necessary to meet the effluent levels, they will certainly need more time than the one-year allowed in the current draft permit, to engineer, fund, permit and construct such a system. The timeline in Part S4 of the draft permit will be very difficult, if not impossible, to achieve.

RESPONSE 142: The requirements of the draft permit with the exception of vacuum sanding and the requirement for the Stormwater Pollution Prevention Plan have been in place for many years and many boatyards are meeting the proposed benchmarks without an engineered treatment system. In addition, the permit is tiered to alert boatyards that they may need treatment BMPs so the time allowed for planning and funding is actually longer than one year.

We believe that the previous permit, with its BMPs, have helped to clean up the environment significantly, but we do not believe that a stormwater filtering system that will remove only minute amounts of copper, is justified or needed. If copper has been proven to be so harmful to the marine environment, then why not stop the manufacturing and use of it completely, and also prohibit all in-water hull scrubbing by divers, which is a much greater source of pollution than that of stormwater.

RESPONSE 143: Ecology is re-issuing the notice to divers and marinas that diver-cleaning of hulls painted with soft (ablative) copper paints is a violation of chapter 90.48 RCW and is subject to enforcement action. Ecology has determined that it is not practical to issue permits to diver operations but if we observe this occurrence the divers are subject to penalties up to \$10,000 a day for each violation.

Ecology agrees with the comment that copper bottom paints should be banned, however, we don't believe we have the authority to do so without a specific legislative directive. In the event that we measure a violation of the water quality standard for copper (including a sediment standard) that was found to be caused by copper paints Ecology could ban copper paints in the area of the violation under the authority of the Clean Water Act. Copper has been studied extensively in San Diego Bay, California because the bay exceeds water quality criteria for copper. It has a large recreational fleet and a naval port. The studies in Shelter Island Yacht Basin (California Regional Water Quality Control Board San Diego Region, 2005) estimated 95% of the copper loading came from passive leaching of material from hulls. Other sources such as hull cleaning, urban runoff, background, and atmospheric deposition contributed the remainder. The regional Water Quality Control Board has proposed a 10 year plan to phase out the use of copper paints.

Also, we want to go on record to be opposed to the additional sampling criteria in January. We do not believe that that would accomplish anything given the fact that it is in the middle of winter when there is not a lot going on. There's a lot of rain, but by that time everything will be washed away. That's all I have.

RESPONSE 144: The January sample was required because, as noted, there's a lot of rain in this month. The sample provides an estimate of concentration or loading "when there's not a lot going on."

My name is **Paul Miller**. I am the owner of Miller ? Group in Seattle. We've been involved in the process since 1992 in terms of the original implementation of treatment systems and so forth and have remained in touch with it because even though we aren't _____ we wanted to be involved with the implementation of whatever comes down with a permit. At this time I've only got a couple of fairly specific comments. I would like to see some clarification in terms of definitions within the permit of hull, topside, superstructure on boats. They're used somewhat interchangeably.

The question of pressure washing a hull as opposed to pressure washing the bottom of the hull below the water line, the issue of working on the hull above the water line, the issue of superstructure...all of these definitions should be more clearly defined, since apparently the crux of a lot of this has to do with pressure washing the bottom paint, which I take to be below the water line.

RESPONSE 145:

The following definitions have been placed in the permit:

hull - A hull is the body or frame of a ship or boat. It is a central concept in water vessels. The hull is essentially what keeps the water from entering the boat and acts as the walls and floor of the vessel.

superstructure - structure consisting of the part of a ship above the main deck

topside - That part of a vessel above the wales (horizontal members that aid in wall/form reinforcement and distribution of forces.); now in yachts sometimes understood as the part between the water-line and deck, or the freeboard

Another comment would be with regard to the vacuum sanding requirement. I think the requirement for vacuum sanding is appropriate for sanding on boat bottoms. I do not think it's appropriate with regard to it being mandatory for the preparation of other surfaces for painting, varnishing, gel coating, realizing that there's still requirements for particulate discharge and that sort of thing. And, I think that that needs to be clarified as to when vacuum sanding is mandatory.

RESPONSE 146: Vacuum sanding is mandatory on the hull and wherever else it can be used. There may be some superstructure surfaces, such as molding or sharp-edged surfaces where it is not practical and the permit has been changed to allow for this exception.

One of the things that's been particularly difficult with the various regimes at the Department of Ecology over the last 10 years, has been the lack of involvement with Department of Ecology people in actually coming to boatyards, monitoring and helping us, assisting us in meeting Department of Ecology requirements. I would like to see the inclusion of what is essentially Best Management Practices for DOE with regard to required site visits at boatyards, consistent direction from the Department of Ecology as far as sampling. I realize from the permits that there are general guidelines as far as sampling, but there's a great deal of difficulty that is very site specific in terms of how I sample my stormwater versus how the boatyard up the street or up the Sound samples theirs.

RESPONSE 147: Since the time of issuance of the last boatyard permit, Ecology has developed more detailed guidance for sampling stormwater. A guidance document for sampling stormwater is available on the internet at (http://www.ecy.wa.gov/programs/wq/stormwater/manual.html#How_to_Find_the_Stormwater_Manual_on_the)

And, I would suggest that that had a great deal to do with the really radical variations in samples that were taken, rather than necessarily a lack of care on the part of the boatyards to minimize their discharge. I really think it's the responsibility of the Department of Ecology to more effectively address how we can work with them.

RESPONSE 148: Comment noted.

It's a lot to say. Thank you.

OK

I'd like to thank the Department for allowing me to give some verbal comments tonight. **My name is Barry Kellems.** I work for BBL, a consulting engineering firm and I'm here representing the Northwest Marine Trade Association and the member boatyards. I've been involved with the committee and in general, my general comment is that I think the permit is a workable permit. The strategy that's come up is, I think, reasonable using benchmarks and mandatory BMP's, monitoring. But again, it's only going to be as good as the training and the ability of Ecology to communicate. It's not just the boatyards. A lot of the boatyards don't have sophisticated environmental specialists on board. They can't afford to hire consultants. So, it's going to be real important. My comments are really just to make the permit a little bit more workable...more implementable. But, in general, I think the strategy of the permit is good.

RESPONSE 149: Comment noted.

Specific comments. On the benchmarks, I believe the dilution factors used do not represent reasonable numbers. They're specifically...I think they're overly conservative and in that regard, I think that the mandatory BMPs and all the other requirements of the Permit, I would think the more reasonable assumption on the mixing zones is in order. I won't go into the details and the math and everything here. I'll be submitting a written comment...a set of written comments and I'll be able to cover those that way.

RESPONSE 150: See response 23

Regarding the mandatory BMP of vacuum sanding. I think mandatory BMP of the vacuum sanders is important but I think it needs to have more specifics of when the vacuum sander would be used and allow some flexibility on larger sanding jobs where a grinder might be acceptable with 100% containment under vacuum positive pressure or tarping. There were several boatyards that were doing grinding and I was even there with other people and we were all impressed with the ability to control the emissions on a large sanding job where the grinder was the preferred method. And they went through

the process of building the containment system and taking all the necessary operational BMP's. All the smaller sanding jobs where they don't have...it's not economically feasible to do the total containment...and just have to go out and sand a little part...that I think, is where the vacuum sander really is going to be appropriate. So I would hope to see some clarification on that.

RESPONSE 151: See responses 24 and 146

In water vessel maintenance and repair. The previous permit allowed minor work in water on a vessel's hull on less than 25% of the surface area above the water line. The current permit prohibits any work of that nature. A couple of comments...one is WHY is it prohibited. If we have high copper levels in the storm water, what's the impetus for requiring this prohibition. Another comment on that would be in the exemptions for the boatyard permit. It allows that specifically less than 25% work in water. And this would be for marinas that may have mobile jobbers that come on and do this type of work. It just seems like it's not fair to allow that work to happen at other places and not have and-----and then, probably the most important part of that comment is that this work is really a big part of what they do at boatyards and needs to be done. They can't haul out every boat when they're just going to do some minor work.

RESPONSE 152: Hull maintenance and repair has a high probability of depositing material, especially copper-containing material, in the water. Ecology doesn't believe plastic tarping is reliable containment, especially around the water where high gusty winds occur frequently. It's also very difficult to hang containment on a vertical surface and work on that same surface. The 25% allowance was placed back in the permit but only for deck or superstructure work where the deck can be used as part of the containment.

Another comment on the paint and solvent use. This is similar to the previous comment. The previous permit allowed painting over water with certain limitations. The draft permit prohibits any painting over water. So again, all the same comments I just applied to the in-water hull work would be presented for that requirement as well.

RESPONSE 153: See response 152 and 26.

Those are my comments on the Permit itself. On the fact sheet, I think there needs to be some additional clarification. The term enhanced filtration being used in the part for the groundwater discharge, I believe, is not appropriate. There are a number of shipyards that discharge, infiltrate the groundwater. Their only pretreatment before doing that is settling in detention basins. And they're able to consistently meet the groundwater quality standards of a thousand parts per billion for copper. So, requiring, or even suggesting the requiring of some type of pretreatment of enhanced filtration doesn't seem

to be appropriate for those applications. But, at the same time, enhanced filtration could possibly be useful if you were going to do a surface water discharge. And, there are some commercial technologies that are out there that are considered enhanced filtration. This is where the filtration is over and above what simple sand filtration would be, or some absorptive media that is specific in removing dissolved metals. Those technologies are out there. They're all innovative, and they're all in the process of being tested. So basically, the boatyard would have to do some sort of bench testing or full scale pilot testing prior to going that route. So, there's other treatment technologies but I think the way enhanced filtration is handled needs to be clarified.

RESPONSE 154: See response 30.

The final comment. There is an economic impact analysis on page 20 of the fact sheet. That analysis is incomplete. It does not include all of the possible economic impacts as a result of this permit. Probably, the largest economic impact that's not addressed would be the need to prepare an engineering report or to implement treatment BMPs at a boatyard. That could be significant. Ecology's own cost analysis that was done in 2001 for the stormwater management manual implementation found that for a one acre commercial development implementing treatment BMPs, including everything from design to _____ construction would be from \$280,000 for \$570,000. So that's a significant number with respect to the typical boatyard...where many boatyards are greater than an acre in size who do have industrial activities in an area greater than one acre. So a full cost impact would include that type of cost as well. And, those are my comments.

RESPONSE 155: See response 31

Thanks.

Thank you

Mr. Campbell

Thank you. My name is **Michael Campbell**. President of the Northwest Marine Trade Association. My comments won't be technical in nature at all, but just to help the Public Records say that the Northwest Marine Trade Association is 58 years old, has over 900 members, many of whom are boatyards and who are covered under the current permit. I had a chance to serve on the advisory committee and that was an experience that was two plus years. And, I'll be direct in saying I think the Department made a mistake when they issued the draft permit and then said that there was not a need for another advisory

committee meeting before the public process started. I think they missed an opportunity to try to bring the two sides ...if there are sides in this issue...between the environmentalists and the boatyard operators together in a non-confrontational way to try to tune up the permit to try and find out if the permit could be acceptable by both sides. I think the boatyards are anxious to have a permit. We haven't had other than the continuation of the existing permit...we haven't had a proper permit for two and a half years. I don't think another month would have hurt. And, so I'm being direct in saying I think that was a bad decision because I think it could lead to a protracted discussion, arguments, conflicts and this potentially might not be resolved. And, I felt like the advisory committee of phase II was good spirited people at the table who could have made some more progress that might have avoided some conflict. My personal opinion.

RESPONSE 156: Comment noted.

And, also as an observer of the department during the advisory committee meetings. I thought it was really embarrassing that the department always had to cry "we don't have any money." Because, the business community, I'm certain, doesn't see that. They see a growing state government getting more and more money, going to big buildings with lots of employees and not that I'm on a tirade here, but to say we need to regulate, we need to control, we don't have any employees that can go out and either check or teach. To me this seems disingenuous. I hope that they can re-orient their priorities so that they do have people who can go out and help boatyards that do want to have clean water, do the proper testing, and try to implement the proper BMPs. I think it's easier to regulate than it is to go out and teach, and I hope the Department can do more teaching in the future.

RESPONSE 157: Comment noted. Our records show from the period of 1998 to August '05 our SW Regional Office has conducted 44 inspections/technical visits for the 24 facilities in that region. Our NW Regional Office has conducted 43 inspections/technical visits for the 82 facilities in that region.

I also think that the department needs to recognize the small business owners are not experts in this field. I did my best to read through the 37 page draft permit and the fifty page fact sheet and it is hard to grasp if you are not an educated person in this area or in this field. And, boatyards are small businesses. They don't have on staff the expertise that a shipyard does. And, not all of them have people on staff with 4 year degrees. And so, wow, trying to make sense of all that is really difficult.

RESPONSE 158: Ecology has visited many of the boatyards during the preparation of this permit to explain the new elements and other workshops will be scheduled when the permit is close to issuance. The permit and fact sheet by regulation must give legal and technical details that often aren't clear to someone not working in the water pollution field. The permit contains requirements which

should be clear to boatyard facilities. Boatyard managers who don't understand any part of the permit should contact their regional permit manager.

The economic impact commented on, you know, this is only going to take a certain amount of money, well, our members are business owners. I owned my own business for 10 years. My wife currently owns her own business for about 25 years. And, I think the state just forgets about the economic impact of having employees spending time doing non-productive things. Whether they're supposed to be making a donut or fixing a boat, that's what the business does that gets paid for. And, all the time spent in pushing pieces of paper around, trying to figure out what a _____ is and keep all the records, has a real hard bottom line cost that the small business owner has to employ somebody to do that work that they don't get paid anything for. And so, again, it's so easy to regulate and sit and think about all the things that businesses should be doing without ever having walked a mile in the shoes of a person who's trying to operate a business. I also think it's really hard for people in the regulatory world to understand the collective impact of all these rules and regulations. One at a time, they sound reasonable, but to pile them one on top of the other, it really can break the back of a small business. And that is the people who employ people from the state of Washington. Our former governor had something called the Governor's Competitiveness Council, I think it was. And I applaud that. I hope the Department... I don't think that that agency or council exists anymore under the current administration, but I hope that the Department takes the time to think about what that goal was... is keeping our businesses competitive in this state. The boatyards need to survive here. We do not need to send every boat that needs repairing to Canada, where they don't have the same environmental regulations. And we'd close all our boatyards. That's not in the interest of the state. At the same time, we want clean water. So, I'm just saying, don't forget the balancing act that is so, so important for a business. The Northwest Marine Trade Association remains committed to being at the table, working with the Department, whether this gets implemented or appealed or whatever, I hope that everyone that works with us knows our heart's in the right place. That we want clean water but we want the Department to recognize the challenges that small businesses have to survive today in this state. Thank you for this opportunity.

RESPONSE 159: Comment noted. Ecology believes this permit allows for competitive boatyard businesses while protecting the environment.

REFERENCES

California Regional Water Quality Control Board, San Diego Region, 2005. Total Maximum Daily Load for Dissolved Copper in Shelter Island Yacht Basin, San Diego Bay. Resolution No. R9-2005-0019 Basin Plan Amendment and Technical Report.

Ecology, 2001. *Concentrations of Selected Chemicals in Sediments from Harbors in the*

San Juan Islands. Publication No. 01-03-007.

Hart Crowser, 1997. Final Report- Shipyard AKART Analysis for Treatment of Stormwater. Prepared for Maritime Environmental Coalition, Seattle, WA.

Seligman, P.F. and A. Zirino (eds.) 1998. *Chemistry, Toxicity, and Bioavailability of Copper and It's Relationship to Regulation in the Marine Environment*. Office of Naval Research Workshop Report, Technical Document 3044, Space and Naval Warfare Systems Center, San Diego, CA 92152.

USEPA. 1997. *Profile of the Shipbuilding and Repair Industry*. EPA 310-R-97-008.

USEPA. 2003. *2003 Draft Update of Ambient Water Quality Criteria for Copper*. EPA 822-R-03-026.

Gunther Rosen, Ignacio Rivera-Duarte, Lora Kear-Padilla, and D. Bart Chadwick. *Use of Laboratory Toxicity Tests With Bivalve and Echinoderm Embryos to Evaluate the Bioavailability of Copper in San Diego Bay, California, USA*. Environmental Toxicology and Chemistry: No. 24, pp. 415-422.

List of Permitted Boatyards

2520 WESTLAKE BLVD	WAG030057B	JIM MCNEILLY	1080 W EWING ST	SEATTLE WA 98119
ALBERT JENSEN & SONS INC	WAG030001B	NOURDINE JENSEN	PO BOX 968	FRIDAY HARBOR WA 98021
B & B MARINE SERVICES LLC	WAG030068B	BRIAN BUCHANAN	949 14TH ST	EVERETT WA 98201
BJ LEVEN MARINA	WAG030118A	KYLE WILLIAMS	250 W PERIMETER ROAD	RENTON WA 98055
BLAINE MARINE SERVICES LLC	WAG030118A	TIM STODARD	198 MARINE DRIVE #3	BLAINE WA 98230
BLAINE MARINE SERVICES SEMIAHMOO	WAG030044B	SUSAN BROOKS	9540 SEMIAHMOO PKWY	BLAINE WA 98230-6
BOATYARD AT COLONY WHARF	WAG030009B	ROBERT STERNHAGEN	PO BOX K	BELLINGHAM WA 98
BOATYARD LLC	WAG030102A	WILLIAM BECK	3281 FAIRVIEW AVE E	SEATTLE WA 98102
BOATYARD THE	WAG030104A	KEVIN KEELY	1855 E DAY ISLAND BLVD W	UNIVERSITY PLACE
BREMERSON YACHT CLUB	WAG030001B	BILL RUMBOLD	2750 YACHT HAVEN WAY	BREMERSON WA 98
CANAL BOATYARD LLC	WAG030047B	JANET BENSON	4300 11TH AVE NW	SEATTLE WA 98107
CAP SANTE MARINE KENMORE	WAG030014B	RICHARD MAROTTI	6201 NE 175TH STREET	KENMORE WA 9802
CAP SANTE MARINE LTD	WAG030012B	DALE ENGENBRETSOHN	PO BOX 807	ANACORTES WA 98
CAP SANTE MARINE SOUTH	WAG030022B	DAN MAY	PO BOX 807	ANACORTES WA 98
COMMODORE MARINE SERVICES	WAG030100B	HENRY STREICH	3900 15TH AVE W STE 300	SEATTLE WA 98119
CSR MARINE INC	WAG030013B	SCOTT ANDERSON	2401 N NORTHLAKE WAY	SEATTLE WA 98103
CSR MARINE SOUTH	WAG030009B	PAUL GROVE	22501 DOCK STREET S	DES MOINES WA 98
DAGMARS MARINA	WAG030056B	KERRAN MANLEY	1871 ROSS AVE	EVERETT WA 98205
DEER HARBOR BOATWORKS	WAG030103A	MICHAEL DURLAND	PO BOX 203	DEER HARBOR WA 9
DELTA MARINE INDUSTRIES INC	WAG030061B	MARK CRUSTINO	1008 S 90TH ST	SEATTLE WA 98106
DIAMOND BLUE/PMC MARINE	WAG030125A	DILLON OBERHOLZER/RUDOLPH OELOFSE	2555 N NORTHLAKE WAY	SEATTLE WA 98103
DIAMOND BLUE/PMC MARINE	WAG030125A	DILLON OBERHOLZER/RUDOLPH OELOFSE	2918 NW BUCKLIN HILL RD #219	SILVERDALE WA 98
DIAMOND BLUE/PMC MARINE	WAG030125A	DILLON OBERHOLZER/RUDOLPH OELOFSE	2630 WESTLAKE AVENUE N	SEATTLE WA 98109
DOCKSIDE SALES AND SVC	WAG030016B	GARY JOHNSON	PO BOX 65	PORT ORCHARD WA
DUNATOS MARINE SVC	WAG030025B	PATRICIA SEGULJA	2309 N NORTHLAKE WAY	SEATTLE WA 98103
EG HARBOR SVC INC	WAG030063B	KATHLEEN KRANIG	285 CORNET BAY RD	OAK HARBOR WA 9
EVERETT BAYSIDE MARINE	WAG030078B	JEFF LALCKE	1001 14TH ST	EVERETT WA 98201
EVERETT MARINE CO-OP	WAG030086B	JUDD TIRIUS	10631 - 190TH ST SE	MONROE WA 98272
EVERETT PORT NORTH MARINE	WAG030030B	DEAN SHAUGHNESSY	PO BOX 534	EVERETT WA 98206
FAIRVIEW MARINE INC	WAG030021B	JIMMY CAMPBELL	3133 FAIRVIEW AVE E	SEATTLE WA 98102
GALLERY MARINE	WAG030023B	DON GORSBOROWSKI	717 NE NORTHLAKE WAY	SEATTLE WA 98105
GARDNER BOAT REPAIR INC	WAG030113A	WILLIAM GARDNER	2611 NW 54TH ST	SEATTLE WA 98107
GIS HARBOR BOAT YARD INC	WAG030100B	WALTER WILLIAMSON	PO BOX 387	GIS HARBOR WA 98
GRANVILLE MARINE	WAG030122A	JEFF GRANVILLE	3201 T AVE	ANACORTES WA 98
GREGGS DIESEL SERVICE INC	WAG030126A	WAYNE GREGG	620 - 30TH STREET	ANACORTES WA 98
HARBOR MARINE MAINTENANCE & SUPPLY	WAG030063B	STEVE WELCH	811 14TH ST	EVERETT WA 98201
HILTON HARBOR MARINA	WAG030030B	BRIAN HAWLEY	1000 HILTON AVE	BELLINGHAM WA 98
HOOD CANAL MARINA CORP	WAG031068B	JIMMY CHEN	PO BOX 86	UNION WA 98562-0
HOWARD MOE ENTERPRISES	WAG031014B	HOWARD MOE	825 QUEEN AV	HOQUIAM WA 98555
HYLAND MARINE	WAG031044A	DAN WHYLAND	1060 MARINE VIEW DRIVE	TACOMA WA 98422-
HYLEBOE MARINA	WAG031020B	RON OLRIE	1940 MARINE VIEW DR	TACOMA WA 98422-
ISLANDS MARINE CTR	WAG030072B	RON MENG	PO BOX 88	LOPEZ ISLAND WA 1
JENSEN MOTOR BOAT CO	WAG030068B	ANCHOR DEWITT JENSEN	1417 NE BOAT ST	SEATTLE WA 98105
JIMS L & M MARINE INC	WAG030108A	JERRY CARLSON	969 14TH ST	EVERETT WA 98201
KEYPORT UNDERSEA CHARTER & SALVAGE	WAG030073B	WARREN POSTEN SR	PO BOX 105	KEYPORT WA 98341
KITSAP MARINE INDUSTRIES INC	WAG030027B	ORRIN NELSON	1595 SW BAY ST	PORT ORCHARD WA
LA CONNER MARITIME SVC	WAG030074B	ED OCKREWIEZ	PO BOX 818	LACONNER WA 982
LAKE UNION YACHT CENTER	WAG030060B	TRI BLUSH	1341 N NORTHLAKE WAY	SEATTLE WA 98103
LARSSON MARINE LLC	WAG030004B	BROOKE LARSSON	1005 NE BOAT STREET	SEATTLE WA 98105

LECLERCQ MARINE CONST INC	WAG0300288	SAM LECLERCQ	1080 W EWING ST	SEATTLE WA 98110-1422
LIEB MARINE SERVICES LLC	WAG030124A	DAVE LIEBRICH	2425 NW 54TH ST	SEATTLE WA 98107-
LOVICS SEA CRAFT	WAG0300908	FLORENCE LOVRIC	3022 OAKES AVE	ANACORTES WA 98221-1323
MARINE SERVICENTER	WAG0300958	SKIP DASSLER	2417 T AVENUE	ANACORTES WA 98221-2857
MARINE SERVICES & ASSIST	WAG0300838	JOHN AYDELOTTE	221 W CORNET BAY RD	OAK HARBOR WA 98277-0756
MARINE SVCS NW	WAG0300298	'DOUG WILSON	PO BOX 28940	BELLINGHAM WA 98228-
MARINERS HAVEN	WAG030070B	MARK DAHL	1851 SE CATALINA DR	OAK HARBOR WA 98277-0699
MARITIME COMMERCE CTR	WAG0300848	BOB MERRELL	2390 W COMMODORE WAY	SEATTLE WA 98199-1285
MERCER MARINE INC	WAG030071B	KEVIN HEASLETT	3911 LAKE WASHINGTON BLVD S	BELLEVUE WA 98006-1107
MILLER & MILLER BOATYARD	WAG030115A	PAUL MILLER	2700 W COMMODORE WAY	SEATTLE WA 98199-
MODUTECH MARINE	WAG031016B	CARL SWNDAHL	2218 MARINE VIEW DR NE	TACOMA WA 98422-4111
MORRIS & CO DBA OCEAN ALEXANDER	WAG030090B	SCOTT MORRIS	1115 N NORTHLAKE WAY	SEATTLE WA 98103-8917
NORDLUND BOAT CO	WAG031025B	PAUL NORDLUND	1826 MARINE VIEW DR	TACOMA WA 98422-
NORTH HARBOR DIESEL & YACHT SERVICE	WAG030123A	HOWARD BEAN	720 30TH STREET	ANACORTES WA 98221-
NORTH HARBOR DIESEL & YACHT SVC	WAG030101A	HOWARD BEAN	720 30TH STREET	ANACORTES WA 98221-
NORTH ISLAND BOAT CO	WAG030120A	JASON GRAHAM	700 - 28TH STREET	ANACORTES WA 98221-2953
NORTH ISLAND BOAT CO	WAG030120A	JASON GRAHAM	700 28TH ST	ANACORTES WA 98221-2878
NUGGET BOAT WORKS INC	WAG030061B	T A MAERTZ	931 13TH ST	EVERETT WA 98201-1639
NW YACHTS & BOAT YARD	WAG031028B	HAROLD PALMER	253-658-7700	-
PADDEN CREEK MARINE INC	WAG030033B	'VIC DUPPENTHALER	PO BOX 4177	BELLINGHAM WA 98227-4177
PAKONEN & SON	WAG031013B	'EDWARD BOLDT	380 ST HWY 409	CATHLAMET WA 98612-
PORT OF EDMONDS	WAG030034B	MICHAEL FAHEY	336 ADMIRAL WAY	EDMONDS WA 98020-7214
PORT OF ILWACO BOATYARD & MARINA	WAG031017B	MACK FUNCK	PO BOX 307	ILWACO WA 98624-
PORT OF PORT ANGELES	WAG031027B	'SUSAN BAUER	P.O. Box 1350	PORT ANGELES WA 98362-
PORT OF PORT ANGELES	WAG031027B	'SUSAN BAUER	PO BOX 1350	PORT ANGELES WA 98362-0251
PORT OF PORT TOWNSEND BOAT HAVEN	WAG031006B	KEN RADON	PO BOX 1160	PORT TOWNSEND WA 98366-0980
PORT OF SKAGIT CNTY LACONNER MARINA	WAG030039B	GREG WATSON	PO BOX 1120	LA CONNER WA 98257-
PORT ORCHARD MARINE RAILWAY	WAG030089B	GENE SCOTT	405 BAY STREET	PORT ORCHARD WA 98366-
REED BROS SHIPYARD	WAG030038B	MORRIS O JONES	100 SHIPYARD RD	DECATUR WA 98221-9401
SEA COAST TOWNS INC	WAG030111A	SARAH MAZUREK	2708 W COMMODORE WAY	SEATTLE WA 98109-
SEAVIEW BOATYARD NORTH	WAG030118A	'JOHN PAPAJANI	4701 SHILSHOLE AVE NW	SEATTLE WA 98107-4802
SEAVIEW EAST BOATYARD	WAG030042B	JOHN PAPAJANI	4701 SHILSHOLE AVE NW	SEATTLE WA 98107-4802
SEAVIEW WEST BOATYARD	WAG030043B	JOHN PAPAJANI	4701 SHILSHOLE AVE NW	SEATTLE WA 98107-4802
SEVEN SEAS MARINE LLC	WAG030127A	GARY GOODALE	2930 WESTLAKE AVE N STE 100	SEATTLE WA 98109-1968
SHELTON YACHT CLUB	WAG031010B	IR W JOHNSTON	SE 260 BRIGHAM CT	SHELTON WA 98584-
SKYLINE MARINA	WAG030039B	BETH FRANJLOVIC	2011 SKYLINE WAY	ANACORTES WA 98221-2953
SOUTH BEND BOAT SHOP	WAG031000B	CHRIS FOSSE	255 ROBERT BUSH DR	SOUTH BEND WA 98586-0091
SOUTH PARK MARINA	WAG030045B	GUY CROW	8604 DALLAS AVE S	SEATTLE WA 98108-4853
SULDANS BOAT WORKS INC	WAG030046B	GREG SULDAN	1343 SW BAY ST	PORT ORCHARD WA 98367-
SUNNFJORD BOATS	WAG031018B	TODD D MILLER	5420 MARINE VIEW DR NE	TACOMA WA 98422-2705
SWANTOWN BOATWORKS	WAG031043A	BRUCE MARSHALL	650 MARINE DR NE	OLYMPIA WA 98501-
SWEGLE BOATWORKS	WAG031042A	KENNETH W SWEGLE	1233 LORRAINE AVE	RAYMOND WA 98577-
THE SHIPYARD	WAG031039B	'DON ROOT	PO BOX 441	HOQUIAM WA 98550-0441
TOTEM MARINE SERVICE	WAG031026B	L R WESTGARD	820 EAST D ST	TACOMA WA 98421-
VIC FRANCKS BOAT CO INC	WAG030049B	RAY YOUNG	PO BOX 31082	SEATTLE WA 98103-1082
VIA DOC MCNEIL ISLAND BOATYARD	WAG031035B	WAYNE GAY	PO BOX 900	STEILACOOM WA 98588-
WEST SOUND MARINA INC	WAG030054B	ELIZABETH WAREHAM	PO BOX 119	ORCAS WA 98280-
WESTBAY MARINA	WAG031015B	'NEIL FALKENBURG	2100 WEST BAY DR NW	OLYMPIA WA 98502-
WESTERN TOWBOAT CO INC	WAG030114A	ROBERT SHREWSBURY	617 NW 40TH STREET	SEATTLE WA 98107-

WESTMAN MARINE INC
WESTWIND MARINE INC
YACHT PERFORMANCE CENTER
YACHTFISH MARINE
YARROW BAY YACHT SALES & SVC
ZITTEL'S

WAG030053B 'NORM WALSH
WAG030037B 'A W BUCKLER
WAG030106A TONY STEMPAK
WAG030078B STEPHEN YADRISH
WAG030065B DENNIS BORTKO
WAG031012B 'MICHAEL ZITTEL

PO BOX 948
721 SIMUNDSON DR
915 NE BOAT ST
1141 FAIRVIEW AVE N
5207 LAKE WASHINGTON BLVD N
9144 GALLEA ST NE

BLAINE WA 98231-
POINT ROBERTS WA 98281-8510
SEATTLE WA 98105-
SEATTLE WA 98109-4418
KIRKLAND WA 98033-7321
OLYMPIA WA 98516-9528